

Appendix D3 – Management Programs (Illicit Discharge and Elimination)

**HARFORD COUNTY ILLICIT
DISCHARGE MONITORING PROGRAM:
SITE SELECTION, SCREENING, AND
QUALITY ASSURANCE PROTOCOLS**

Prepared for

Harford County
Department of Public Works
Division of Highways and Water Resources
212 South Bond Street, 3rd Floor
Bel Air, Maryland 21014

Prepared by

Versar, Inc.
9200 Rumsey Road, Suite 100
Columbia, MD 21045

Draft, November 1, 2010

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION.....	1-1
2.0 SITE SELECTION	2-1
3.0 COUNTY NOTIFICATION PROCEDURES	3-1
3.1 INTRODUCTION	3-1
4.0 FIELD PROTOCOL	4-1
4.1 BACKGROUND	4-1
4.2 SELECTED ANALYTES	4-1
4.3 DRY WEATHER SCREENING	4-3
4.4 RETESTING WATER CHEMISTRY	4-4
4.5 TRACKING DOWN THE SOURCE OF AN IMPROPER DISCHARGE	4-5
4.6 HEALTH AND SAFETY	4-5
5.0 DATA MANAGEMENT/QUALITY CONTROL	5-1
6.0 ANNUAL SUMMARY REPORT	6-1
7.0 REFERENCES.....	7-1
 APPENDICES	
A Pertinent Information from Literature Searches	A-1
B Characteristics of Industrial Discharges	B-1
C Field Equipment Checklist.....	C-1
D Standard Operating Procedures for Dry Weather Screening	D-1
E Data Sheets for Dry Weather Screening	E-1
F Health and Safety Guidance for Dry Weather Screening Field Staff	F-1
G Summary of Survey of Phase 1 Community IDDE Internal Communication Protocols	G-1
H IDDE Case Tracking Database Elements, Entry Form, and Draft County Citizen Concern Form.....	H-1
I Hot Spot Investigationst.....	I-1

1.0 INTRODUCTION

Under Maryland's National Pollutant Discharge Elimination System (NPDES) permit program, counties are required to implement plans to detect, isolate, and eliminate improper discharges to the municipal separate storm sewer system (MS4). Improper discharges to the MS4 are those un-permitted discharges that do not originate as stormwater runoff. Improper discharges can be hazardous to public health, harmful to aquatic life in receiving waters, and detrimental to water quality. Improper connections or discharges to the MS4 may be the result of misconnection of a portion of the sanitary sewer system to the storm sewer system, failure of sewer infrastructure allowing infiltration of public drinking water or sanitary sewer effluent into the storm sewer system, inadvertent or deliberate discharges of prohibited effluent to the MS4, or other causes.

Federal regulation defines an illicit discharge as any discharge to an MS4 that is not composed entirely of stormwater, except allowable discharges pursuant to an NPDES permit, including those resulting from fire fighting activities. Recent guidance prepared for EPA by the Center for Watershed Protection (Brown et al. 2004) provides further explanation, noting that illicit discharges are found at storm drains with measureable flow during dry weather containing pollutants and/or pathogens. Dry weather discharges (as described by Brown et al. 2004) can include illicit types, such as the following:

- sewage and septic flows;
- washwater flows, such as residential gray water (laundry) discharges, water from commercial car washes, fleet washing, commercial laundries, and floor washing to shop drains; and
- liquid wastes such as oil, paint, and process water that enter the storm drain system

Dry weather flows can also be associated with cleaner discharges that would typically not be considered illicit:

- tap water, from leaks and losses from a water supply system;
- landscape irrigation, when excess clean water from residential or commercial irrigation flows into the storm drain system; and
- groundwater or spring water entering the MS4.

Harford County conducts dry weather screening on outfalls within its jurisdiction and are reported annually as a part of the County's NPDES Annual Report submission.

The County's Division of Highways and Water Resources (within the Department of Public Works) is responsible for NPDES monitoring and reporting on IDDE efforts. This response, site screening, and reporting protocol document will serve as the field operations and data management manual for the NPDES dry weather screening program. The recommended protocol presented in this document is based on EPA's IDDE guidance (Brown et al. 2004). This dry weather screening program is part of an overall approach for compliance with NPDES requirements to (1) identify MS4 outfalls in the county; (2) screen MS4 outfalls for dry weather

discharge, the presence of pollutants, or other visible signs of an illicit discharge or connection; and (3) refer the illicit discharge or connection to the appropriate County or State agency for correction. Dry weather screening will be performed on 100 County MS4 outfalls that are pre-selected during desktop analysis. Other outfalls that are encountered during dry weather screening activities will count toward the overall tally of 100 screened outfalls. Suspected illicit discharges or connections that require further investigation will be referred to Maryland Department of the Environment (MDE) for trackdown and source determination.

2.0 SITE SELECTION

Harford County has completed a desktop analysis of illicit discharge potential based on criteria described in Brown et al. (2004). Normalized illicit discharge potential (IDP) scores were determined for all georeferenced outfalls in the County. The IDP scores were divided into three categories:

- 1) Low IDP Risk - 1.0 to 1.66
- 2) Medium IDP Risk- 1.67 to 2.33
- 3) High IDP Risk- 2.34 to 3.00

At present, no outfalls within the County's jurisdiction fall within the high IDP risk category.

From the prioritized outfall data, 100 outfalls were selected for field screening. The target outfalls satisfy the following criteria:

- Include 75% of the outfalls from the medium IDP risk class
- Include 25% of the outfalls from the low IDP risk class
- Include only outfalls coded in the GIS as system (SYS) or culvert with attached storm drain (C2) outfalls; exclude culverts (C1)
- Exclude outfalls that lie within the boundaries of the following incorporated municipalities: The Town of Bel Air, City of Havre de Grace, and City of Aberdeen.
- Exclude outfalls that are under the jurisdiction of the State Highway Administration (MS4). These outfalls will be found on or connected to state or federal highways.
- Include 20% of previously inspected outfalls (15% from medium IDP risk class and 5% from low IDP risk class).
- Prioritize sites from highest to lowest IDP score.

A list of targeted outfalls will be provided to Harford County for approval prior to the initiation of field screening. During screening, if an outfall is encountered in the field that is not included in the list and has not been previously screened, screen the outfall and it will count toward the overall total of 100 outfalls.

3.0 COUNTY NOTIFICATION PROCEDURES

3.1 INTRODUCTION

In order to efficiently and effectively identify, document, respond to, and resolve cases of illicit discharges, appropriate staff of Harford County's Department of Public Works will be notified immediately, from the field, if screening results indicate the outfall has a "high potential" for illicit connection or in the best judgment of field screening staff. The order of contact will be as follows:

1. Deborah Lewis
(410) 638-4109 ext. 1059 (work)
dvlewis@harfordcountymd.gov
2. Elizabeth Weisengoff
(410) 638-3545 ext. 1394 (work)
(410) 322-7783 (personal cell)
eaweisengoff@harfordcountymd.gov
3. Christine Buckley
(410) 638-3545 ext. 1176 (work)
(410) 688-3044 (work cell)
cmbuckley@harfordcountymd.gov

Additionally, a follow-up e-mail to Deborah Lewis will be prepared at the end of the field day to summarize field findings on each day that a "high potential" illicit discharge is noted.

"High potential" illicit connections will be identified as follows, when possible:

- internal plumbing connection (i.e., washing machine or garage drain connected to storm sewer system lateral)
- sanitary sewer (lateral from a building connected to the MS4)
- infrastructure failure (e.g., collapsed sewer line discharging into the MS4)
- indirect transitory discharge resulting from leaks, spills, or overflows.

The procedure for contacting the County to report a confirmed illicit connection is further illustrated in Section 4.

4.0 FIELD PROTOCOL

4.1 BACKGROUND

Dry weather MS4 screening programs typically involve monitoring both physical and chemical characteristics of dry weather flows. The Center for Watershed Protection (CWP, Zielinski and Brown no date) surveyed 21 jurisdictions nationwide and identified many commonly used physical and chemical parameters (Appendix A, Table A-1) that may indicate illicit discharges to a stormwater system. MS4 outfalls are inspected for visible evidence of dry weather flow. Physical indicators of a potentially improper discharge often are evident even when flow is not present; such indicators include outfall damage, deposits or stains, and algal growth in pipes. Physical indicators evident with flow include odor, color, turbidity, and the presence of floating material such as oil, sewage, or suds (Brown *et al.* 2004). If flowing water is present at an outfall during dry weather, the quality of the flowing water is assessed in the field. Water quality testing for possible pollutants and characteristics such as pH, temperature, and turbidity provides on-the-spot information to help distinguish between improper discharges and other possible sources of dry weather flow, such as groundwater infiltration. CWP discussed several analytes that can serve as useful indicators of improper discharges in residential and industrial areas (Brown *et al.* 2004). A similar list of analytes commonly used to screen stormwater outfalls, along with comments on the utility of each (NEIWPCC 2003) is included in Appendix A, Table A-1.

The following field protocol and recommended components were developed after reviewing guidance developed for the U.S. Environmental Protection Agency (EPA) by CWP (Brown *et al.* 2004) and from Harford County program requirements:

- Inspect the selected outfalls for physical evidence of dry weather flow.
- If flowing water is present, perform water chemistry tests in the field. Perform cursory track down of source of flowing water.
- Weather permitting, re-inspect and test all outfalls exhibiting flow the following day and if feasible.

A flow chart illustrating field screening, retest, trackdown, and reporting procedures is presented in Figure 4-1. Field procedures for dry weather screening as well as health and safety procedures common to all components, are described in Sections 4.3 and 4.4.

4.2 SELECTED ANALYTES

Table 4-1 shows the selected analytes and their ability to aid in detecting various kinds of discharges. Selection was based primarily on information provided in Brown *et al.* (2004) and County requirements.

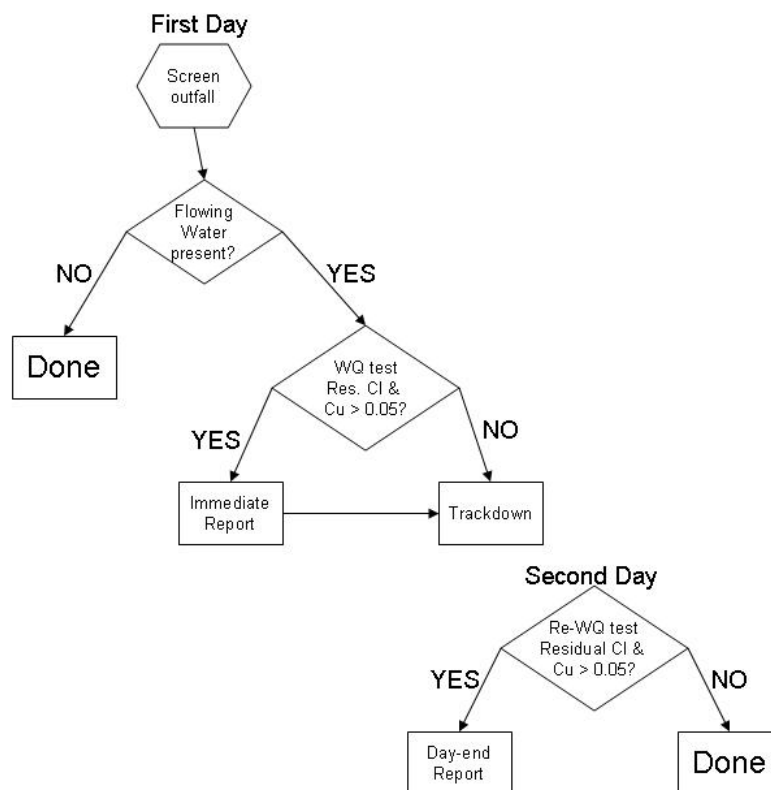


Figure 4-1. Flow chart illustrating diagnostic values of water chemistry results, reporting, and tracking down “high potential” illicit discharges.

Table 4-1. Analytes, testing ranges, and criteria for dry weather discharge screening in Harford County.

Recommended Analyte	Effluent Type Indicated	Kit or Probe	Action Criterion	Minimum Detection Limit	Instrument Range
residual chlorine (Cl)	industrial drinking water sewage	color comparator	> 0.05 mg/l ^b	0.05 mg/l	0 to 5 mg/l
color	sewage washwater	color kit	> 20 color units		
copper (Cu)	industrial	color comparator	> 0.05 mg/l ^b	0.05 mg/l	0 to 10 mg/l
phenols	dry cleaning	color comparator	> 0.05 mg/l ^b	0.05 mg/l	0 to 12 mg/l
turbidity	industrial sewage washwater	sonde	≥ 1000 NTU ^a	0 NTU	

Table 4-1. (Continued)					
Recommended Analyte	Effluent Type Indicated	Kit or Probe	Action Criterion	Minimum Detection Limit	Instrument Range
surfactants (detergents)	sewage washwater	single analyte meter	> 0.25 mg/l (residential) ^a	0.15 mg/l	0.15 to 1
DO	sewage	sonde			
water temperature	sewage	sonde	> 23.9 C ^c		
pH	Industrial washwater	sonde	≤ 5 (industrial) ^a		0 to 14
conductivity	industrial	sonde	> 2 mS/cm ² (industrial) ^a		
^a Brown <i>et al.</i> 2004 ^b Exceedance criterion based on the test range of the field kit ^c Source: Baltimore County (2007)					

Results of screening tests will be compared to the criteria presented in Table 4-1 to assist in identifying the possible source of a suspected improper discharge or illicit connection.

Detectable concentrations of one or more analytes can be used to classify an illicit discharge. For example, the presence of chlorine can indicate either tap water leaking from a broken supply pipe or sewage. Source tracking and subsequent analyses can be used to classify the discharge. The presence of residual chlorine and copper, low turbidity, but no odor can be used to classify the discharge as tap water. The presence of detergent, copper, and residual chlorine can be used to classify the discharge as wash water. Discharges with no residual chlorine, low conductivity and turbidity can be used to classify the discharge as groundwater infiltration.

Samples that exceeded the thresholds for a) both residual chlorine and copper or b) detergents are considered to have “high potential” to contain illicit discharge. Samples exceeding a single threshold of chlorine or copper were considered to have “medium potential” to contain illicit discharge, and samples with a single parameter other than chlorine, copper, or detergents exceeding the threshold were considered to have some potential to be illicit discharge.

4.3 DRY WEATHER SCREENING

Initial dry weather screening activities include assessing the physical characteristics of the outfall and any discharge, and performing screening chemistry tests on the discharge (if present). Optimal conditions for field screening are during dry and leaf-off periods. Field screening will not proceed unless there has been less than 0.10 inches of rainfall in the preceding 24 hours (Harford County 2010). Field crews will verify that this dry-time criterion has been met before beginning field operations. Leaf-off conditions usually begin in October, depending on yearly temperature and rainfall patterns. The field staff will obtain and gather the materials listed

in Appendix C prior to field work on any given day. Standard operating procedures for use, calibration, maintenance, and quality control for all field equipment are provided in Appendix D.

To facilitate data collection and information management, data gathered during the dry weather screening will be recorded in electronic datasheets running on ArcPad software. In case of instrument failure, data will be recorded on pre-printed field data sheets (Appendix E). Datasheets developed by Harford County's IDDE program were used as the basis for the electronic field datasheets. Field crews will use this data entry form to record on-site information for each outfall using a series of text boxes, drop down menus, and check boxes. Information collected at each site will be stored in a GIS database for subsequent organization and reporting.

When using the Global Position System (GPS) unit, it is important to note that satellite coverage may be limited when in close proximity to buildings, sizable headwalls, or copious leafy tree cover.

The following screening information will be entered onto field data sheets:

1. **Background Data:** Record date, physical location, GPS location, investigators, land use information and other background data.
2. **Outfall Description:** Enter information describing the outfall, including closed pipe or open channel, physical dimensions, shape, orientation, material type, etc. Indicate if water is flowing from the outfall and describe (*e.g.*, yes, no, intermittent, stagnant).
3. **Quantitative Characterization:** If flowing water is observed, perform water chemistry tests as described in Appendix D-1.
4. **Physical Indicators for Flowing Outfalls Only:** Collect information on physical features of flowing outfalls (*e.g.*, odor, color, turbidity, floating materials).
5. **Physical Indicators for Flowing and Dry Outfalls:** Collect information on physical features of both flowing and dry outfalls. Examine outfall for presence and type of algae, abnormal vegetation, damage, stains, and condition of plunge pool (if any). Structural problems (*e.g.*, cracking, holes in corrugated metal pipes) should also be noted.
6. **Overall Outfall Characterization and Illicit Discharge Potential:** Select the appropriate rating based on information described above.

4.4 RETESTING WATER CHEMISTRY

The purpose of retesting is to verify that a suspected improper discharge is a persistent problem and that analytical results of a one-time water chemistry test are not random out-of-bounds effluent conditions or technician error. The field crew will retest all field parameters (Table 4-1) if an outfall contains flowing water. Retesting will be conducted within 24 hours of the original test, when practical.

The retesting results will be entered into the handheld GPS unit by creating a duplicate screening record using the “add point” feature in ArcPad.

4.5 TRACKING DOWN THE SOURCE OF AN IMPROPER DISCHARGE

If flowing water is encountered in a targeted outfall, track the source of the discharge by observing flows, testing upstream, consulting maps to identify potential sources. The goal is to determine either the source of the discharge or the segment of probable origin (i.e., the segment between the last positive and the first negative test result moving upstream of the original outfall). Field staff should not spend more than ½ hour on a trackdown.

Track down the probable illicit discharge by moving up the trunk of the storm drain network from the initial outfall, looking for an illicit connection or other visible source of the improper discharge. Inspect each site (junction, manhole, etc.) upstream and test the effluent (if present) at manholes or outfalls until results show no further evidence of the improper discharge. The goal is to isolate the discharge between two test points.

In many cases the improper discharge may be traced by observing the presence of water in manholes through air vents in manhole covers. If these holes are obstructed or other conditions prevent observation through the holes, the manhole cover may be removed. Field personnel typically should not need to enter manholes to detect and sample effluent. If access into manholes is needed, a member of the field crew who is certified in confined spaces entry will perform the task. For reasons of safety, only appropriately trained and certified field personnel may enter outfalls or the storm water distribution system. In the event that sampling below grade is necessary, lower an extender pole with plastic pitcher into the manhole to sample the discharge. The field protocols will be modified based on existing field conditions and successes and challenges encountered during field work. Results of the track-down effort will be communicated to Harford County following the procedures outlined in Section 3.1.

4.6 HEALTH AND SAFETY

Ensuring the health and safety of field personnel is the responsibility of every member of the staff of the program. The collective effort of all staff members in providing a healthy and safe work environment will minimize or eliminate the potential for accidents. In general, the following safety protocol will be followed to protect the field staff:

1. Bring cell phone and first aid kit on all field site visits.
2. Exercise caution when encountering ants, snakes, raccoons, geese, mice, and the like.
3. Many outfalls are located in remote areas that may be near gathering places for homeless or transient individuals. Do not enter a potentially hostile area.
4. Use common sense during electrical storms and/or when severe conditions (e.g., high wind, hail) develop. The safety of field staff overrides all other considerations.

5. Perform field work in teams of two whenever possible. No staff should be on-site between 12 a.m. and 6 a.m.
6. Storm sewer outfalls contain a variety of waterborne bacteria and other harmful chemicals. Wash hands or use antibacterial wipes or hand gels liberally, especially prior to lunch breaks, etc.
7. Any work in confined spaces will be performed by technicians who are appropriately trained and certified for such work.

Additional information on health and safety may be found in Appendix F, including information on field staff conduct, personal protective equipment, confined space entry, dangerous flora and fauna, unknown hazardous substances and wastes, bloodborne pathogens, remote areas, hand tool safety, weather-related hazards, and heat and cold stress.

5.0 DATA MANAGEMENT/QUALITY CONTROL

Data will be captured electronically in the field using a data entry form designed specifically for this effort that is operated with a hand-held computer. The data entry form is configured to display prompts that prevent the user from leaving key data fields blank. The template stores electronic data in a geodatabase. The data fields include those used for the county's dry weather screening efforts. If the hand-held unit fails, field crews will complete hardcopy field datasheets (Appendix F). The electronic datasheet will speed data collection and eliminate the need for post-field data entry, thereby saving time and preventing errors introduced by data entry errors.

At the conclusion of each field day, data recorded on the handheld unit will be backed up to a desktop computer and uploaded to a network computer system. This daily backup will lessen the chances of losing data due to theft, breakage, loss, or other failure of the handheld computer. If hardcopy field data sheets have been used, copies will be stored in a secure location, and information will be entered directly into the geodatabase via ArcPad. The list of outfall sites visited will be checked periodically against the target list of outfalls to be screened to be sure that none have been missed and no data have been lost.

A separate field data sheet will be used to record data related to tracking down the source of an improper discharge (Appendix F). Copies of these field data sheets will be stored in a secure location.

A final database will be prepared and appended to Harford County's MDE Appendix 1 data submittal format as part of an annual summary report on dry weather screening activities (Section 6.0).

6.0 ANNUAL SUMMARY REPORT

Included with the annual summary report on dry weather screening will be a summary of results of outfall screening, including a brief description of targeted areas; number of outfalls screened; number of sites visited; number of outfalls that exhibited dry weather flow; number of outfalls that met one or more water chemistry criteria for an improper discharge; and number and location of outfalls that warranted notification of Harford County DPW staff.

The report will be accompanied by an MS Access database to organize field screening data. The structure of the database will be consistent with the County's current outfall screening databases, with some added fields, and will be useful for reporting to MDE with the NPDES Annual Report.

7.0 REFERENCES

- Baltimore County. 2007. National Pollutant Discharge Elimination System (NPDES) Annual Report. Section 5 - Illicit Connections Program. Baltimore County, Maryland.
- Brown, E., D. Caraco, and R. Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection, Ellicott City, MD. October.
- New England Interstate Water Pollution Control Commission (NEIWPCC). 2003. Illicit Discharge Detection and Elimination Manual: A Handbook for Municipalities. Lowell, Massachusetts. January. http://www.neiwpcc.org/PDF_Docs/iddmanual.pdf.
- Pitt, R., M. Lalor, R. Field, D. Adrian, and D. Barb9. 1993. A User's Guide for the Assessment of Non-Stormwater Dischargers into Separate Storm Drainage Systems. EPA/600-R-92-238. Risk Reduction Engineering Laboratory, U.S.EPA. Cincinnati, OH.
- Wright, T., C. Swann, K. Cappiella, and T. Schueler. 2005. Unified Subwatershed and Site Reconnaissance: A User's Manual, Version 2.0. Center for Watershed Protection, Ellicott City, MD. February.

APPENDIX A

**PERTINENT INFORMATION FROM
LITERATURE SEARCHES**

Table A-1. Analytes commonly used to screen outfalls (NEIWPCC 2003)

TABLE 1 WATER QUALITY TEST PARAMETERS AND USES		
Water Quality Test	Use of Water Quality Test	Comments
Conductivity	Used as an indicator of dissolved solids	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Typically measured in the field with a probe
Ammonia	High levels can be an indicator of the presence of sanitary wastewater	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Used very often and equipment is readily available; Boston, MA uses a field test kit (see case example)
Surfactants	Indicate the presence of detergent (e.g., laundry, car washing)	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Boston, MA uses a field test kit (see case example)
pH	Extreme pH values (low or high) may indicate commercial or industrial flows; not useful in determining the presence of sanitary wastewater (which, like uncontaminated baseflows, tends to have a neutral pH, i.e., close to 7)	- Pitt et al. 1993 suggested parameter; EPA Phase II regulations recommended parameter - Typically measured in the field or lab with a probe
Temperature	Sanitary wastewater and industrial cooling water can substantially influence outfall discharge temperatures. This measurement is most useful during cold weather.	- Pitt et al. 1993 suggested parameter - Measured in the field with a thermometer or probe
Hardness	Used to distinguish between natural and treated waters	- Pitt et al. 1993 suggested parameter
Total Chlorine	Used to indicate inflow from potable water sources; not a good indicator of sanitary wastewater because chlorine will not exist in a "free" state in water for long (it will combine with organic compounds)	- Pitt et al. 1993 suggested parameter
Fluoride	Used to indicate potable water sources in areas where water supplies are fluoridated	- Pitt et al. 1993 suggested parameter
Potassium	High levels may indicate the presence of sanitary wastewater	- Pitt et al. 1993 suggested parameter
Optical Brighteners (Fluorescence)	Used to indicate presence of laundry detergents (which often contain fabric whiteners, which cause substantial fluorescence)	-Pitt et al. 1993 suggested parameter -Used by City of Winooski, VT (see case example)
Bacteria (fecal coliform, <i>E. coli</i> , and/or <i>enterococci</i>)	Used to indicate the presence of sanitary wastewater	- Used by NHDES (see case example in chapter 5)

APPENDIX B

CHARACTERISTICS OF INDUSTRIAL DISCHARGES

Table B-1. Chemical and physical properties of industrial non-stormwater entries into storm drainage systems (Pitt *et al.* 1993)

Industrial Categories Major Classifications SIC Group Numbers		Odor	Color	Turbidity	Floatables	Debris & Stains	Damage to Outfall Structures	Vegetation	pH	Total Dissolved Solids
<u>Primary Industries</u>										
20	Food and Kindred Products									
201	Meat Products	Spilled Meats Rotten Eggs and Flesh	Brown to Reddish Brown	High	Animal Fats, Byproducts Pieces of Processed Meats	Brown to Black	High	Flourish	Normal	High
202	Dairy Products	Spilled Milk Rancid Butter	Gray to White	High	Animal Fats Spilled Milk Products	Gray to Light Brown	High	Flourish	Acidic	High
203	Canned & Preserved Fruits & Vegetables	Decaying Products Compost Pile	Various	High	Vegetable Waxes, Seeds, Skins, Cores, Leaves	Brown	Low	Normal	Wide Range	High
204	Grain Mill Products	Slightly Sweet & Musty Grainy	Brown to Reddish Brown	High	Grain Hulls and Skins Straw & Plant Fragments	Light Brown	Low	Normal	Normal	High
205	Bakery Products	Sweet and or Spoiled	Brown to Black	High	Cooking Oils, Lard, Flour, Sugar	Gray to Light Brown	Low	Normal	Normal	High
206	Sugar and Confectionery Products	NA	NA	Low	Low Potential	White Crystals	Low	Normal	Normal	High
207	Fats and Oils	Spilled Meats, Lard or Grease	Brown to Black	High	Animal Fats, Lard	Gray to Light Brown	Low	Normal	Normal	High
208	Beverages	Flat Soda, Beer or Wine, Alcohol, Yeast	Various	Moderate	Grains & Hops, Broken Glass, Discarded Canning Items	Light Brown	High	Inhibited	Wide Range	High
21	Tobacco Manufactures	Dried Tobacco, Cigars, Cigarettes	Brown to Black	Low	Tobacco Stems & Leaves	Brown	Low	Normal	Normal	Low
22	Textile Mill Products	Wet Burfap, Bleach, Soap, Detergents	Various	High	Papers and Fillers Fibers, Oils, Grease	Gray to Black	Low	Inhibited	Basic	High
23	Apparel and Other Finished Products	NA	Various	Low	Some Fabric Particles	NA	Low	Normal	Normal	Low
<u>Material Manufacture</u>										
24	Lumber & Wood Products	NA	NA	Low	Some Sawdust	Light Brown	Low	Normal	Normal	Low
25	Furniture & Fixtures	Various	Various	Low	Some Sawdust, Solvents	Light Brown	Low	Normal	Normal	Low
26	Paper & Allied Products	Bleach, Various Chemicals	Various	Moderate	Sawdust, Pulp Paper Waxes, Oils	Light Brown	Low	Normal	Wide Range	Low
27	Printing, Publishing, and Allied Industries	Ink, Solvents	Brown to Black	Moderate	Paper Dust, Solvents	Gray to Light Brown	Low	Inhibited	Normal	High
31	Leather & Leather Products	Leather, Bleach Rotten Eggs or Flesh	Various	High	Animal Flesh & Hair Oils & Grease	Gray to Black Salt Crystals	High	Highly Inhibited	Wide Range	High
33	Primary Metal Industries	Various	Brown to Black	Moderate	Ore, Coke, Limestone Miscals, Oils	Gray to Black	High	Inhibited	Acidic	High
34	Fabricated Metal Products	Detergents, Rotten Eggs	Brown to Black	High	Dirt, Grease, Oils Sand, Clay Dust	Gray to Black	Low	Inhibited	Wide Range	High
32	Stone, Clay, Glass, and Concrete Products	Wet Clay, Mud Detergents	Brown to Reddish-Brown	Moderate	Glass Particles Dust from Clay or Stone	Gray to Light Brown	Low	Normal	Basic	Low

(continued)

Table B-1. (Continued)

Industrial Categories Major Classifications SIC Group Numbers		Odor	Color	Turbidity	Floatables	Debris & Stains	Damage to Outfall Structures	Vegetation	pH	Total Dissolved Solids
<i>Chemical Manufacture</i>										
28	Chemicals & Allied Products									
281	Alkalis and Chlorine	Strong Halogen or Chlorine	Alkalis - NA	Moderate	Glass Particles	Gray to	Highly	Normal	Basic	Low
2		Pungent, Burning	Chlorine - Yellow		Dust from Clay or Stone	Light Brown	Inhibited			
281	Inorganic Pigments	NA	Various	High	Low Potential	Various	Low	Highly	Wide	High
8								Inhibited	Range	
282	Plastic Materials and Synthetics	Pungent, Flethy	Various	High	Plastic Fragments, Pieces of Synthetic Products	Various	Low	Inhibited	Wide	High
283	Drugs	NA	Various	High	Gelatin Byproducts for Capsulating Drugs	Various	Low	Highly	Normal	High
284	Soap, Detergents, & Cleaning Preparations	Sweet or Flowery	Various	High	Oils, Grease	Gray to Black	Low	Inhibited	Basic	High
285	Paints, Varnishes, Lacquers, Enamels and Allied Products (SB-Solvent Base)	Latex-Ammonia SB-Dependent upon Solvent (Paint Thinner, Mineral Spirits)	Various	High	Latex - NA SB-All Solvents	Gray to Black	Low	Inhibited	Latex- Basic SB- Normal	High
286	Industrial Organic Chemicals									
286	Gum and Wood Chemicals	Pine Sprits	Brown to Black	High	Resins and Pine Tars	Gray to Black	Low	Inhibited	Acidic	High
1										
286	Cyclic Crudes, & Cyclic Intermediates, Dyes, & Organic Pigments	Sweet Organic Smell	NA	Low	Translucent Sheen	NA	Low	Highly	Normal	Low
5								Inhibited		
287	Agricultural Chemicals									
287	Nitrogenous Fertilizers	NA	NA	Low	NA	White Crystalline Powder	High	Inhibited	Acidic	High
3										
287	Phosphatic Fertilizers	Pungent Sweet	Milky White	High	NA	White Emorphous Powder	High	Inhibited	Acidic	High
4										
287	Fertilizers, Mixing Only	Various	Brown to Black	High	Pelletized Fertilizers	Brown Emorphous Powder	Low	Normal	Normal	High
5										
29	Petroleum Refining and Related Industries									
291	Petroleum Refining	Rotten Eggs Kerosene, Gasoline	Brown to Black	High	Any Crude or Processed Fuel	Black Salt Crystals	Low	Inhibited	Wide	High
30	Rubber & Miscellaneous Plastic Products	Rotten Eggs Chlorine, Peroxide	Brown to Black	Moderate	Shredded Rubber Pieces of Fabric or Metal	Gray to Black	Low	Inhibited	Wide Range	High

(continued)

Table B-1. (Continued)

Industrial Categories Major Classifications SIC Group Numbers		Odor	Color	Turbidity	Floatables	Debris & Stains	Damage to Outfall Structures	Vegetation	pH	Total Dissolved Solids
<u>Transportation & Construction</u>										
15	Building Construction	Various	Brown to Black	High	Oils, Grease, Fuels	Gray to Black	Low	Normal	Normal	High
18	Heavy Construction	Various	Brown to Black	High	Oils, Grease, Fuels Diluted Asphalt or Cement	Gray to Black	Low	Normal	Normal	High
<u>Retail</u>										
52	Building Materials, Hardware, Garden Supply, and Mobile Home Dealers	NA	Brown to Black	Low	Some Seeds, Plant Parts, Dirt, Sawdust, or Oil	Light Brown	Low	Normal	Normal	Low
53	Gen. Merchandise Stores	NA	NA	NA	NA	NA	Low	Normal	Normal	Low
54	Food Stores	Spoiled Produce Rancid, Sour Oil or Gasoline	Various	Low	Fragments of Food Decaying Produce Oil or Gasoline	Light Brown	Low	Flourish	Normal	Low
65	Automotive Dealers & Gasoline Service Stations	NA	Brown to Black	Moderate	Oil or Gasoline	Brown	Low	Inhibited	Normal	Low
56	Apparel & Accessory Stores	NA	NA	Low	NA	NA	Low	Normal	Normal	Low
57	Home Furniture, Furnishings, & Equipment Stores	NA	NA	Low	NA	NA	Low	Normal	Normal	Low
58	Eating & Drinking Places	Spoiled Foods Oil & Grease	Brown to Black	Low	Spoiled or Leftover Foods	Brown	Low	Normal	Normal	Low
Coal Steam Electric Power		NA	Brown to Black	High	Coal Dust	Black Amorphous Powder	Low	Normal	Slightly Acidic	Low
Nuclear Steam Electric Power		NA	Light Brown	Low	Oils, Lubricants	Light Brown	Low	Normal	Normal	Low

Pitt, R., M. Lalor, R. Field, D. Adrian, and D. Barbé. 1993. *A User's Guide for the Assessment of Non-Stormwater Dischargers Into Separate Storm Drainage Systems*. EPA/600-R-92-238. Risk Reduction Engineering Laboratory, USEPA. Cincinnati, OH.

Table B-2. Significant chemicals in industrial wastewaters (Van der Leeden *et al.* 1990)

<u>Chemical:</u>	<u>Industry:</u>
Acetic acid	Acetate rayon, pickle and beetroot manufacture.
Alkalies	Cotton and straw kierung, cotton manufacture, mercerizing, wool scouring, and laundries.
Ammonia	Gas, coke, and chemical manufacture.
Arsenic	Sheep-dipping, and felt mongering.
Chlorine	Laundries, paper mills, and textile bleaching.
Chromium	Plating, chrome tanning, and aluminum anodizing.
Cadmium	Plating.
Citric acid	Soft drinks and citrus fruit processing.
Copper	Plating, pickling, and rayon manufacture.
Cyanides	Plating, metal cleaning, case-hardening, and gas manufacture.
Fats, oils	Wool scouring, laundries, textiles, and oil refineries.
Fluorides	Gas, coke, and chemical manufacture, fertilizer plants, transistor manufacture, metal refining, ceramic plants, and glass etching.
Formalin	Manufacture of synthetic resins and penicillin.
Hydrocarbons	Petrochemical and rubber factories.
Hydrogen peroxide	Textile bleaching, and rocket motor testing.
Lead	Battery manufacture, lead mining, paint manufacture, and gasoline manufacture.
Mercaptans	Oil refining, and pulp mills.
Mineral acids	Chemical manufacture, mines, Fe and Cu pickling, brewing, textiles, photo-engraving, and battery manufacture.
Nickel	Plating.
Nitro compounds	Explosives and chemical works.
Organic acids	Distilleries and fermentation plants.
Phenols	Gas and coke manufacture, synthetic resin manufacture, textiles, tanneries, tar, chemical, and dye manufacture and sheep-dipping.
Silver	Plating, and photography.
Starch	Food, textile, and wallpaper manufacture.
Sugars	Dairies, foods, sugar refining, and preserves.
Sulfides	Textiles, tanneries, gas manufacture, and rayon manufacture.
Sulfites	Wood process, viscose manufacture, and bleaching.
Tannic acid	Tanning, and sawmills.
Tartaric acid	Dyeing, wine, leather, and chemical manufacture.
Zinc	Galvanizing, plating, viscose manufacture, and rubber process.

Van der Leeden, F., F. Troise, and D. Todd. 1990. The Water Encyclopedia. Lewis Publishers, Chelsea, Michigan.

APPENDIX C

FIELD EQUIPMENT CHECKLIST

EXAMPLE FIELD EQUIPMENT CHECKLIST

Table C-1. Checklist of field equipment and supplies for dry weather screening	
Item	Check-off
ADC map of Harford County	
GPS receiver and display	
Thermometer	
Spare GPS Batteries	
GPS display car charger cable	
Field data sheets (dry weather screening, trackdown) on waterproof paper	
Pencils	
Measuring tape	
Flashlight	
Insect repellent	
Chest waders	
Knee boots	
Mobile phone in plastic zipper bag	
First-aid kit (including antiseptic ointment, bandages, tape, gauze, analgesics, etc.)	
Outfall water quality screening kit(s) and procedure manuals	
Calibrated sonde and display	
Backpack	
Orange/reflective vests	
Work gloves	
County letter of introduction and right of entry (see example)	
Site Screening Plan	
Digital camera	
Spare batteries for digital camera	
Swing sampler and extender pole	
Polypropylene bottles for sharps/waste	
250-mL plastic cup	
500-mL wash bottle containing distilled water	
gallon cubitainer (or equivalent) containing distilled water	
Stopwatch	
Ping pong balls	
1-liter plastic bottle	

APPENDIX D

**STANDARD OPERATING PROCEDURES
FOR DRY WEATHER SCREENING**

D-1. Procedures for Setting Up the Portable Differential GPS Display

The following steps should be taken to initially set up the global positioning system (GPS) unit and display (Trimble ProXT Receiver coupled to Recon display or equivalent).

1. Attach handheld display and receiver to data cable.
2. Turn on GPS unit by pressing the power button on the handheld display. Allow sufficient time for satellite signals to be acquired and differential GPS functionality to be established.
3. If the GPS unit fails, record all data on back-up field data sheets (Appendix E).

Procedures for Entering Data into the GPS Display

1. Select “GPS Active” to turn on GPS system.
2. Display map should move to your position based on GPS position.
3. Add outfall on GIS layer by selecting the point option on the edit toolbar and touching the stylus to the point on the screen corresponding to the desired location of the outfall.
4. Tap on data field desired, then enter screening data as described in Section 3.3. When done, tap OK.

Note that if the outfall is not on the GIS layer loaded on display, assign a unique, temporary identifying number (e.g., beginning at UNK 35). The temporary number may be changed at a later time.

Retest results for outfalls should be recorded as a new point in ArcPad using the original Outfall ID number. To record outfall retest results as a new point, use the solid arrow to select the previously entered outfall to be retested, then touch the "Repeat Attributes" button on the toolbar. Follow the above procedure for adding a new outfall point directly on-top of the existing outfall point. The Repeat Attributes button will automatically fill in the data entry fields with all information previously collected at the selected location, including Outfall ID, Date of Inspection, observations on outfall condition, water quality test results, etc.). Review and update all entries, including current date, field crew, water quality retest results, and other field observations. Turn off “Repeat Attributes” button when finished entering retest results.

D-2. Procedures for Water Chemistry Testing

Water chemistry and water quality measurements of outfall effluent (if present) will be obtained by the use of a single analyte meter (detergents), color comparator kits (copper, chlorine, phenols, and color), and multiparameter sondes, respectively. The single analyte meter and color comparator kits will measure concentrations of targeted, specific analytes that will be used to assess whether a possible illicit discharge exists. The multiparameter sonde measures

water quality parameters such as conductivity, pH, and temperature as a secondary assessment of illicit discharge potential.

Detergents

Fill zero test tube (in detergents test kit) with **distilled water** and wipe dry. Insert into sample cell compartment. Press and hold button until display reads “---” then “0.00.”

1. Rinse red-tipped dropper bottle with sample 3 times, then fill to line with sample.
2. While holding ampoule in vertical position, **snap upper tip** using tip-breaking tool.
3. **Invert** ampoule and position open end over open dropper bottle. **Snap upper tip** and allow to drain into dropper bottle.
4. Cap dropper bottle and shake vigorously with thumb on red cap for **30 seconds**.
5. Loosen and re-tighten cap and then allow to stand undisturbed for **1 minute**. Layers should separate.
6. Remove red cap and slowly invert over a clean **test tube**. Squeeze bottle until all of the **clear** chloroform layer is in test tube. Remaining blue liquid should be disposed of and dropper bottle thoroughly cleaned before next sample.
7. Wipe dry and insert into meter. Allow test tube to stand undisturbed for **4 minutes**.
8. Press and release button; reading will appear immediately (Do NOT hold down button, or you will re-zero meter).

Color- (requires DI water)

1. Fill test tubes up to the lowest line. DI water in one test tube, sample in the other.
2. Insert the sample tube into the hole in top on the right (more towards the center.)
3. DI water tube goes in the left hole (closer to the side.)
4. Open the little door and put the color wheel on its' peg. Close door.
5. Hold it up to a light source, and look straight through. Put the little stoppers in if you'll need to hold it at an angle to get good light.
6. Spin the color wheel in front of the DI water until its' color matches your sample.
7. Read the number (1-100.) Multiply by 5 and that's the result.
8. Was the difference in color very small? If so...
9. Top off the tubes to the uppermost line. And leave them aside. Don't mix 'em up!
10. Reopen the little door, and remove the color wheel, then put the angled mirror thing in place where the bottom of the tubes had been resting. Replace the wheel and if it won't go on make sure the angled mirror is all the way back. Sometimes it gets stuck.
11. Put your samples back through the holes on top. Are you sure you didn't mix them up?

12. Now when you look in, you are looking at the mirror, which is reflecting a lengthwise section of water, and the good light you need is coming through the top of the tubes. Don't put the stoppers in. That'll block too much light.
13. Read the number (1-100) and that's the result.

Phenol

1. Put sample water in the cup up to the 25mL mark.
2. Take out an ampoule from the little blue box. Make sure it has orange crystals on it.
3. Swirl the tip until the crystals dissolve. They don't dissolve completely away, just make sure the orange color is all gone from them.
4. Nestle the tip into one of the notches at the bottom of the cup.
5. Snap the tip by bringing it to an upright position, flat against the inside of the cup above the notch you've nestled in. The vacuum inside of the ampoule will cause sample water to be sucked in.
6. There should be a small bubble still remaining. Turn the ampoule over a few times to make the bubble go from one end to the other, mixing the water inside, at least 3 times.
7. Dry the outside of the ampoule and let it sit for 1 minute.
8. If little or no color developed, put it in the cylinder and hold up to the light, while you look through the bottom to compare. Find your match, and look on the side to see what reading you matched up with.
9. If it's actually colored, use the "high range comparator" which is the series of ampoules mounted on the lid. You shouldn't need to remove them, just hold your sample up to the lid.

Free Chlorine

Identical to Phenols, but there are no crystals to dissolve, so skip steps 2 and 3.

Total Chlorine

1. Put sample water in the cup up to the 25mL mark.
2. Add 5 drops from the "Activator solution" bottle. Stir with a test ampoule tip (but don't break it yet!) and let it sit for 1 minute.
3. Now continue with step 4 above.

Copper

Identical to free chlorine, except wait 2 minutes for color development

Waste Disposal – Waste containers containing sharps from the field (typically 1-liter polypropylene bottle) will be capped, marked clearly as “glass” and placed in ordinary trash at the office. Waste containers containing liquid waste from screening tests (typically 4-liter glass jugs) will be stored in a secure location at the office until a licensed hauler is contracted to remove them. A written report of the detailed contents of the waste will be provided to the hauler.

Multiparameter Sonde (YSI or equivalent)

This instrument is a torpedo-shaped probe (Figure D-1) equipped with multiple sensors on one end that can be used, with proper calibration, to obtain several accurate water quality parameters simultaneously. (YSI 2002 and YSI 1998a). Quarterly, the metal contacts inside of the conductivity probe are cleaned by using a special cleaning brush provided with the sonde. The pH probe is also cleaned quarterly by gently brushing the sensor bulb with a mild detergent. All are rinsed with tap water after cleaning. When not in use, the sonde is stored with the calibration cap containing approximately 10 ml of tap water.



Figure D-1. YSI sonde being calibrated

Field technicians are trained in the proper care, calibration method, and calibration frequency of each water quality parameter on multi-parameter sondes and tabletop laboratory meters. Each probe on the sonde (except temperature) requires recalibration prior to use. Typically, specific conductance and pH will hold their calibrations satisfactorily over several days; therefore, obtaining those measurements within three days of the most recent calibration is acceptable. Detailed instruction on calibration of sondes is provided in Appendix D-2. Calibration information for each sonde is maintained in the Sonde Calibration Logbook which is located on the benchtop at the sonde calibration station. Entered into the logbook is manufacturer and model of the sonde, pre-calibration measurement, and post-calibration measurement. Probes that do not calibrate or that do not hold their calibration at post-calibration reading are replaced immediately.

- **pH Calibration Standard Solution** – When ordering solution, a 20-liter container is obtained to provide sufficient supply for multiple projects. The expiration date for solutions already in use is noted: when the expiration date draws near (i.e., within a month), a new solution is ordered immediately. Responsibility for assuring the availability of adequate quantities of pH solution is the responsibility of the Field Manager. Supplies of pH calibration reagent are ordered from laboratory supply companies that typically ship within a reasonable time.

- Conductivity Calibration Standard Solution – As is the case with pH calibration solution, a sufficient quantity of the conductivity calibration solution is maintained. Restocking occurs when the last 4-liter bottle of reagent is half-empty. In the event that the vendor places the solution on backorder, a 1-liter supply of calibration solution can be prepared from solid KCl on hand. Only a chemist or a trained technician will prepare this solution. The Field Manager will be responsible for assuring an adequate supply of this reagent.

D-2. Procedures for Calibrating Water Quality Monitoring Equipment

These procedures cover basic sonde calibration; however, more detailed procedures for calibration, use, and care are provided in the user's manuals. Calibration of water quality sondes for pH and conductivity should be performed at least every third day when in use; dissolved oxygen calibration should be performed daily.

1. Attach hand-held display and cable. Inspect dissolved oxygen membrane & change membrane if damaged, if air bubble is trapped under membrane, or membrane appears "waxy" (see user's manual).
2. Remove endcap of sonde (while leaving calibration cup screwed on) and rinse electrodes with tap water.
3. Dissolved Oxygen: add 1/8" of tap water to calibration cup and screw on endcap loosely. Wait 10 to 15 minutes for the air to saturate.
4. After saturation, turn on display and note temperature (select SONDE RUN by pressing <enter> [5] button). Consult chart to determine correct DO calibration value for 760 mg/L (alternatively, consult another in-house hand-held display that has built-in barometric capability).
5. Press <escape> to get to the main menu and select SONDE MENU then CALIBRATE.
6. Select DISSOLVED OXY from the list of parameters, then press <enter>. Select DO mg/L from the subsequent menu, then press <enter>. Type the correct calibration value, then press <enter>. [Alternatively (if using display with built in barometer), select DO % from the menu, press <enter> after the barometric pressure appears, note pre-calibration DO reading, then press <enter> again to calibrate.]
7. [if using manually-entered DO calibration value] Wait until the DO value stabilizes, note in calibration book, then press <enter>.
8. Record new DO value in calibration book. Press <escape> key twice to return to the main calibration menu.
9. Specific Conductivity: Discard water used for DO calibration. Add a small portion of conductivity solution (1.412 mS/cm²), cap loosely, agitate, and discard.
10. Add enough conductivity solution to cover all probes (leave endcap off).

11. Select CONDUCTIVITY from list of parameters, then press <enter>. Select SPCOND on the subsequent menu, then press <enter>. Type correct value then press <enter>.
12. Wait until conductivity value stabilizes, note calibration in book, then press <enter>.
13. Record new conductivity value in book. Press <escape> twice to return to main calibration menu.
14. pH: Discard solution in calibration cup. Rinse with tap water, add a small portion of pH 7 buffer, cap loosely, agitate, and discard.
15. Add enough pH 7 buffer to cover all probes (leave endcap off).
16. Select ISE1 PH from the list of parameters and then select the number of points (usually 2), then press <enter>.
17. Type the correct pH value and press <enter>
18. Wait until pH value stabilizes, note in calibration book, then press <enter>.
19. Record new pH value in calibration book. Press <escape> once and repeat calibration for subsequent pH values.
20. Discard solution in calibration cup and rinse with tap water.
21. Press <escape> to return to main menu and place a small quantity of tap water in the calibration cup and secure endcap.
22. Turn display off.

APPENDIX E

DATA SHEETS

FOR DRY WEATHER SCREENING

ILLICIT DISCHARGE INSPECTION FORM
HARFORD COUNTY, MARYLAND
(PAGE 1 OF 2)

Outfall ID:		Watershed Name:	
Initial Assessment			
Date:		Time:	
Inspectors:		Date of Last Rain:	
Air Temperature (°C):		Rainfall Amount (in.):	
Is flow observed?	Yes No	<i>(if present, complete page 2 and a follow-up assessment)</i>	
Outfall Description			
Type:		Height:	
Shape:		Width:	
Material:		Additional components <i>(circle applicable)</i> :	end wall wing walls flared end concrete deck pipes manhole
Outfall Location			
GPS northing:		General land use <i>(circle one)</i> :	Rural Residential Urban
GPS easting:			11 - Low Density 12 - Medium Density
GPS unit:		Maryland Dept. of Planning land use designation <i>(circle one)</i> :	13 - High Density 14 - Commercial
Photo ID's:			15 - Industrial 16 - Institutional
			18 - Urban Open Space
		Nearby address / intersection / utility pole:	
Structural Conditions <i>(circle one)</i>			
	None	Moderate	Severe
Recommend referral for repair:	Yes	No	
Other comments:			
Other Outfall Conditions <i>(circle one)</i>			
	None	Moderate	Severe
Erosion at outfall:			
Outfall submergence (in):			
Other comments:			
Vegetative Condition Below Outfall <i>(circle one)</i>			
	Normal growth (natural environment)	Excessive growth	Inhibited growth
Other comments:			
Deposits / Stains / Algal Growth <i>(circle applicable)</i>			
	None	Oily	Excessive algal growth
	Sediment	Other (describe below)	Excessive bacterial growth
Other comments:			
Field Notes / Visual Observances			

ILLICIT DISCHARGE INSPECTION FORM
HARFORD COUNTY, MARYLAND
(PAGE 2 OF 2)

Outfall ID:		Watershed Name:	
Initial Assessment		Follow-up Assessment (typically within 24 hours)	
<i>(Same as information from Page 1 of 2)</i>		<i>(Do not complete if no flow is observed)</i>	
Date:		Date:	
Time:		Time:	
Inspectors:		Inspectors:	
Date of Last Rain:		Date of Last Rain:	
Rainfall Amount (in.):		Rainfall Amount (in.):	
Air Temperature (°C):		Air Temperature (°C):	
Dry-Weather Flow Information			
Estimated Flow rate: Trickle Moderate Substantial			
Measurable Flow rate (cfs or liters/min): <i>(Q = area X velocity in ft per second)</i>		Measurable Flow rate (cfs): <i>(Q = area X velocity in ft per second)</i>	
Flow depth (inches):		Flow depth (inches):	
Water Quality - Visual and Smell Indicators			
Water color:	clear brown gray green yellow red	Water color:	clear brown gray green yellow red
Other:		Other:	
Clarity / turbidity:	clear cloudy opaque	Clarity / turbidity:	clear cloudy opaque
Other:		Other:	
Floatables:	none oil sheen trash toilet paper fecal matter	Floatables:	none oil sheen trash toilet paper fecal matter
Other debris:		Other debris:	
Detergents / surfactants:	none suds/bubbles	Detergents / surfactants:	none suds/bubbles
Color:		Color:	
Odor:	none sewage chlorine oil/gas rancid-sour sulfur/rotten eggs	Odor:	none sewage chlorine oil/gas rancid-sour sulfur/rotten eggs
Other:		Other:	
Field Measurements			
Parameter (Units / Detection Limit)	Measured Value:	Parameter (Units / Detection Limit)	Measured Value:
<i>(Lamotte meter)</i>		<i>(Lamotte meter)</i>	
Turbidity (0-400 FTU / 0):		Turbidity (0-400 FTU / 0):	
Color (0-1000 color units / 0):		Color (0-1000 color units / 0):	
Phenols (0.00-6.00 ppm / 0):		Phenols (0.00-6.00 ppm / 0):	
Copper (0-6.00 ppm / 0):		Copper (0-6.00 ppm / 0):	
Detergents/surfactants (0.5-8.0 ppm / 0.5):		Detergents/surfactants (0.5-8.0 ppm / 0.5):	
Residual chlorine (0.00-4.00 ppm / 0):		Residual chlorine (0.00-4.00 ppm / 0):	
<i>(Oakton meter)</i>		<i>(Oakton meter)</i>	
DO (0.01-15.0 mg/L / 0.01):		DO (0.01-15.0 mg/L / 0.01):	
Temperature, H ₂ O (0-50° Celsius / 0.1):		Temperature, H ₂ O (0-50° Celsius / 0.1):	
pH (0.01-15.00 pH units / 0.01):		pH (0.01-15.00 pH units / 0.01):	
<i>(YSI meter)</i>		<i>(YSI meter)</i>	
Conductivity (uS/cm/10 ⁶):		Conductivity (uS/cm/10 ⁶):	
Additional Field Notes / Visual Observances			

APPENDIX F

**HEALTH AND SAFETY GUIDANCE
FOR DRY WEATHER SCREENING FIELD STAFF**

F-1. Conduct

All field staff are expected to:

- Understand and comply with health and safety policies. Each employee is not only responsible and accountable for his/her own actions, but for those others around him/her.
- All employees shall show professional courtesy to fellow employees, clients, subcontractors, regulators, and visitors.
- Understand and follow good health and safety practices.
- Horseplay, practical joking, inattention to work or other inappropriate accident-causing behavior will not be tolerated.
- Smoking, eating, drinking and chewing shall be conducted only in designated areas.
- Use of alcohol or controlled substances is prohibited.
- While traveling to and from the job site, employees shall: obey all federal, state and local regulations regarding seat belt use, all traffic laws, and any other laws regarding proper conduct in public areas.

F-2. Personal Protective Equipment (PPE)

Engineering and administrative controls will be used as the primary means of exposure control, as required by OSHA standards. However, PPE may also be necessary to further minimize potential employee exposure. All employees shall dress appropriately for the tasks to be performed. Specialized health and safety equipment, including personal protective equipment, monitoring equipment, and other devices designed to protect the employee shall be issued to the employee on an as-needed basis.

Employees performing field activities and certain laboratory functions have the potential of coming in contact with hazardous materials. Many of these hazardous materials can cause significant injury or illness through acute or chronic exposures. For field work (including industrial operations), all field employees are required to wear the following basic PPE:

- Appropriate work clothing
- ANSI-approved steel-toed, steel-shank boots
- ANSI-approved safety glasses
- ANSI-approved hard hat (when overhead hazards exist)
- Hearing Protection (when appropriate)
- Rain Gear (when appropriate)

F-3. Confined Space Entry Program

A confined space is any location not intended for human occupation, has limited or no ventilation, has the potential for containing dangerous or lethal atmospheres, and has limited ingress/egress. OSHA has addressed confined space entry requirements and procedures in 29 CFR 1910.146 (Permit Required Confined Spaces) and 1926.651 (Excavations). Confined space entry, if necessary, will be performed in accordance with OSHA confined space entry procedures, industry-standard practices, and will be performed by confined space trained personnel. Appropriate confined space entry equipment, including tripod, winch, harness, and atmospheric sampling equipment will be obtained if needed.

The Team Leader will provide ongoing, real time ambient air monitoring of the locations to be sampled to determine the need for personal protection. Entry of the sampling personnel will be allowed if the following criteria are met:

- Oxygen level greater than 19.5%. Atmospheres with oxygen concentrations less than 19.5% are considered oxygen deficient and must be treated as Immediately Dangerous to Life and Health (IDLH) atmospheres.
- Lower explosive limit (LEL) reading is less than 3%

F-4. Dangerous Flora and Fauna

During the course of field activities, employees may come in contact with a wide range of dangerous or toxic animals and plants. Dangerous animals may include: black widow and brown recluse spiders; fire ants; mosquitoes and biting flies; bees, wasps and hornets; ticks and chiggers; microbial organisms (e.g., found in water, soil, and air and on carrier/host organisms); rabid mammals; and poisonous snakes. Dangerous plants may include: thorny plants; poison ivy, oak, and sumac; and molds, mildews, and fungi (which may cause allergic reactions). Contact with these organisms can cause effects from simple discomfort (such as from thorny bush scratches) to severe allergic reactions and possibly death.

F-5. Unknown Hazardous Substances and Wastes

The nature of environmental consulting often times requires the investigation of hazardous substances or wastes whose identity is not known. Because of the serious personal and environmental consequences of unintentional release of chemicals, very specific health and safety procedures must be implemented to monitor ambient conditions, mitigate releases to the environment, and protect workers from exposure. Most of these procedures dovetail with site investigation, sampling, and remediation techniques outlined by EPA policy and should be included in the project comprehensive work plan.

F-6. Bloodborne Pathogens

Exposure to bloodborne pathogens (BBP) is possible in the case of certain emergency situations (e.g., illness or injury in the field). Personnel may be exposed to body fluids such as blood, saliva, vomit, mucus or others. These fluids could contain pathogens that have the potential for causing disease in humans. Should personnel be required to administer life saving procedures, such as CPR, the following procedures will be followed to minimize the potential for exposure in accordance with 29 CFR (Bloodborne pathogens - 1910.1030):

- 1) Wear disposable gloves when hand contact with blood, mucus membranes, non-intact skin or other potentially infectious materials could be involved;
- 2) Use disposable mouthpieces, pocket masks or other ventilation devices for administering artificial ventilation;
- 3) Wash hands with soap and water after administering first aid;
- 4) In the case of eye contact, flush eyes using an eye wash for at least 15 minutes;
- 5) Remove garments contacted by blood or other body fluids as soon as possible;
- 6) Do not eat, drink, smoke or handle contact lenses in areas with possible BBP exposure; and
- 7) Persons cleaning up an accident scene should not pick up broken glass or other sharp objects by hand. All clothes and other items at the first aid scene should be safely secured prior to leaving.

Employees who may have been exposed to BBPs should report the incident at once.

F-7. Remote Areas

The sampling team may be located in areas not readily accessible by vehicle. Radio or telephone communication will be maintained from the sampling team to a base station in the event of an emergency.

F-8. Heavy Lifting

It may be necessary to carry sampling equipment (e.g., coolers, sampling containers, and equipment) during the course of the field activities. Care must be taken to avoid injury while carrying equipment to the sampling locations.

F-9. Hand Tools

Some of the field activities and sampling procedures may require the use of hand tools with sharp edges including machetes, scissors, clippers, knives, and razor blades. Care must be taken during their use to prevent injuries from cuts.

F-10. Weather-related Hazards

Weather-related hazards include the potential for heat or cold stress, electrical storms, treacherous weather-related working conditions, high winds, and limited visibility. These hazards correlate with the season in which site activities occur. In the event of adverse weather conditions, the Field Team Leader will determine if work can continue without endangering the health and safety of site personnel.

F-11. Heat and Cold Stress

This section is applicable to all personnel involved in field work as well as any other workers who may be exposed to temperature stress conditions.

Heat Stress

Heat stress is a significant potential hazard during the warmer months. Heat stress manifests itself as one of three conditions: heat cramps, heat exhaustion, or heat stroke. Heat cramps are brought about by a prolonged exposure to heat. As an individual sweats, water and salts are lost by the body, triggering painful muscle cramps. The signs and symptoms of heat cramps include:

- Severe muscle cramps, usually in the legs and abdomen;
- Exhaustion, often to the point of collapse; and
- Dizziness or periods of faintness.

First aid treatment includes shade, rest, and fluid replacement. The individual will drink electrolyte-replacement fluids (e.g., Gatorade, Squencher, 10-K), which will be made available to field personnel. If the individual has not recovered within ½ hour, then he/she will be transported to the hospital for medical attention.

Heat exhaustion usually occurs in a healthy individual who has been exposed to excessive heat while working or exercising. Blood collects near the skin in an effort to rid the body of excess heat. The signs and symptoms of heat exhaustion include:

- Rapid and shallow breathing;
- Weak pulse;
- Cold and clammy skin, with heavy perspiration;
- Skin appears pale;
- Fatigue, weakness, and/or dizziness; and
- Elevated body temperature.

First aid treatment includes cooling the victim, elevating the feet, and replacing fluids. If the individual has not recovered within ½ hour, he/she will be transported to the hospital for medical attention.

Heat stroke occurs when an individual is exposed to excessive heat, and their body systems become overwhelmed by heat and begin to stop functioning. This condition is a medical emergency, requiring the immediate cooling of the victim and transport to the hospital immediately. The signs and symptoms of heat stroke include:

- Victim has stopped sweating;
- Dry, hot, red skin;
- Body temperature approaching or above 105 °F;
- Dilated (large) pupils; and
- Loss of consciousness; victim may lapse into a coma.

Local weather conditions may produce an environment which will require restricted work schedules in order to protect employees. The Field Team Leader will observe workers for any potential symptoms of heat stress. Adaptation of work schedules and training in recognition of heat stress conditions will help prevent heat-related illnesses from occurring.

Cold Stress

Cold stress is a danger at low temperatures and when the wind chill factor is low. Cold stress is generally described as a local cooling (frost nip, frost bite, and freezing) or a general cooling (hypothermia). Personnel working outdoors in temperatures at or below freezing may be subject to local cooling. Areas of the body that have a high surface area-to-volume ratio, such as fingers, toes, and ears, are the most susceptible. The three categories of local cooling include:

- Frost nip - characterized by a blanching or whitening of the skin;
- Frost bite - skin has a waxy or white appearance and is firm to the touch, but the tissue beneath is resilient; and
- Freezing - skin tissue is cold, pale, and solid.

Frost nip and frost bite first aid includes covering the affected area with warmth and retreating to a warm area. Frozen tissue is a medical emergency, and the victim will be transported to the hospital immediately.

General cooling (hypothermia) occurs when exposure to cold reduces body temperature. With prolonged exposure, the body becomes unable to maintain its proper internal temperature. Without treatment, hypothermia will lead to stupor, collapse, and death. The signs and symptoms of mild hypothermia include:

- Shivering;
- Numbness; and
- Drowsiness.

First aid for mild hypothermia includes using heat to raise the individual's body temperature. Heat may be applied to the victim in the form of heat packs, hot water bottles, and blankets.

The signs and symptoms of severe hypothermia include:

- Unconsciousness;
- Slowed respiration or respiratory arrest;
- Slowed pulse or cardiac arrest;
- Irrational or stuporous state; and
- Muscular rigidity.

First aid for severe hypothermia includes handling the victim very gently; rough handling may set off an irregular heart beat. Do not attempt to re-warm the severely hypothermic victim; re-warming may cause the development of an irregular heart beat. Severe hypothermia is a medical emergency, and the victim will be transported to the hospital immediately.

Prevention of cold stress is a function of whole body protection. Adequate insulated clothing will be worn when the air temperature drops below 50 °F. Reduced work periods may be necessary in extreme conditions to allow adequate periods in a warm area.

APPENDIX G

HARFORD COUNTY LETTER OF INTRODUCTION

DAVID R. CRAIG
HARFORD COUNTY EXECUTIVE

LORRAINE COSTELLO
DIRECTOR OF ADMINISTRATION



ROBERT B. COOPER, P.E.
DIRECTOR OF PUBLIC WORKS

H. HUDSON MYERS, III, P.E.
DEPUTY DIRECTOR OF PUBLIC WORKS

HARFORD COUNTY GOVERNMENT

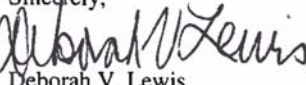
DEPARTMENT OF PUBLIC WORKS
DIVISION OF HIGHWAYS AND WATER RESOURCES

October 11, 2010

Dear Sir/ Madame:

As required under the County's municipal NPDES permit, Harford County Water Resources Engineering has an Illicit Discharge Monitoring Program. This program requires the County to monitor stormdrain outfalls to ensure that improper discharges are not entering the storm water system. Due too the nature of this program we need to monitor the stormdrain outfalls that exist on your property.

Harford County Government has contracted with Versar to implement this program. Representatives from this firm will be visiting your business or home to conduct onsite monitoring. Harford County Government is requesting your permission for our consultant to access, the stormdrain outfalls that exist on your property. Additional information about Harford County municipal NPDES program is located at www.harfordcountymd.gov/waterresources/annualreport.html. If you have any questions or concerns about this matter, please do not hesitate to contact me at 410.638.4109.ext. 1059 or dvlewis@harfordcountymd.gov.

Sincerely,

Deborah V. Lewis
Environmental Engineer

Preserving Harford's past; promoting Harford's future

MY DIRECT PHONE NUMBER IS 410-638-3509
212 SOUTH BOND STREET, 3rd FLOOR, BEL AIR, MARYLAND 21014 • www.harfordcountymd.gov

APPENDIX H

HARFORD COUNTY RIGHT OF ENTRY

Harford County, MD

Page 1 of 1

§ Inspection: right of entry.**A.**

All records, buildings and premises subject to inspection under this Code shall be inspected from time to time by the designated officer of the county or his designee.

B.

All records, rooms and areas of a building or premises shall be available and accessible for such inspection, which shall be made during usual business hours if the premises are used for nonresidential purposes, provided that inspections may be made at other times if:

(1)

The premises are not available during the foregoing hours for inspection;

(2)

There is reason to believe that violations are occurring on the premises which can only be apprehended and proved by inspection during other than the prescribed hours; or

(3)

There is reason to believe a violation exists of a character which is an immediate threat to health or safety, requiring inspection and abatement without delay.

C.

Where the designated officer or his designee is refused entry or access or is otherwise impeded or prevented by the owner, occupant or operator from conducting an inspection of the premises, such person shall be in violation of this Code and subject to the penalties thereunder.

APPENDIX I

HOT SPOT INVESTIGATIONS

Hot Spot Investigations (HSIs) are an assessment of a site's potential to deliver pollutants to the MS4 as a result of a variety of conditions and practices on the site. Elements of the HSI include assessments of: materials storage, materials transfer, housekeeping practices, secondary containment practices, irrigation practices, waste management practices, physical plant condition, and vehicle operations.

Potential parcels selected for HSIs are selected by

- determining the land use of a parcel
- identifying the name of the parcel owner
- comparing the list of parcels to previously investigated parcels (to eliminate previously investigated parcel)

Once the parcels are identified, the list of potential parcels is forwarded to Harford County DPW for review. The County may include other parcels of special interest.

Once the parcels have been approved, field staff conducts a “windshield” survey of the targeted parcels and businesses. Field staff will pay particular attention to potential pollution sources from outdoor material storage (e.g., unprotected storage of pesticides, solvents, bulk materials, or hazardous materials), vehicle operations (e.g., outdoor maintenance, uncovered fueling operations), uncovered storage of trash or presence of leaking dumpsters, condition of the physical plant (e.g., connection of downspouts, condition of building(s), condition of pavement), landscape management (e.g., turf management status, presence of non-target irrigation), and condition of stormwater infrastructure (e.g., presence of stormwater controls, litter in gutters). Staff prepares the HSI field data sheet (Wright, et al. 2005).

Hotspots requiring immediate attention are reported to County personnel in the same order as presented in Section 3.1. Such notifications are made within two business days of their discovery. Only “confirmed” or “severe” hotspots, as determined from field data sheets, are immediately reported to the County (Figure I-1).

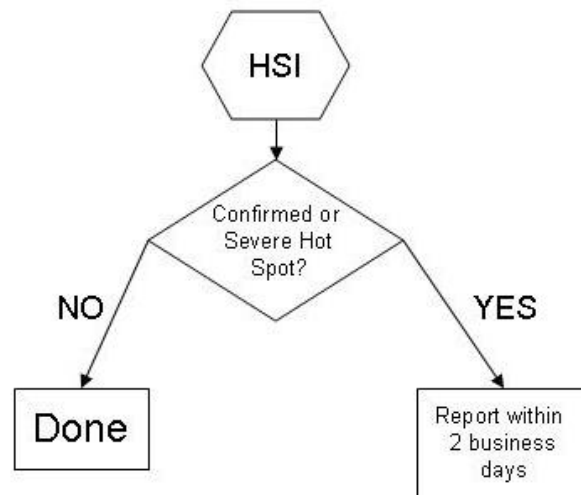


Figure I-1. Flow chart of HSI reporting to the County.

Hotspot Site Investigation

HSI

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID:	
DATE: ____/____/____		ASSESSED BY:		CAMERA ID:	
MAP GRID:		LAT ____° ____' ____" LONG ____° ____' ____"		LMK #	
A. SITE DATA AND BASIC CLASSIFICATION					
Name and Address: _____		Category: <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Miscellaneous <input type="checkbox"/> Institutional <input type="checkbox"/> Municipal <input type="checkbox"/> Golf Course <input type="checkbox"/> Transport-Related <input type="checkbox"/> Marina <input type="checkbox"/> Animal Facility			
SIC code (if available): _____		Basic Description of Operation: _____			
NPDES Status: <input type="checkbox"/> Regulated <input type="checkbox"/> Unregulated <input type="checkbox"/> Unknown		INDEX*			
B. VEHICLE OPERATIONS <input type="checkbox"/> N/A (Skip to part C)					Observed Pollution Source? <input type="checkbox"/>
B1. Types of vehicles: <input type="checkbox"/> Fleet vehicles <input type="checkbox"/> School buses <input type="checkbox"/> Other: _____					
B2. Approximate number of vehicles: _____					
B3. Vehicle activities (circle all that apply): Maintained Repaired Recycled Fueled Washed Stored ○					
B4. Are vehicles stored and/or repaired outside? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
Are these vehicles lacking runoff diversion methods? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
B5. Is there evidence of spills/leakage from vehicles? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
B6. Are uncovered outdoor fueling areas present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
B7. Are fueling areas directly connected to storm drains? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
B8. Are vehicles washed outdoors? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
Does the area where vehicles are washed discharge to the storm drain? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C. OUTDOOR MATERIALS <input type="checkbox"/> N/A (Skip to part D)					Observed Pollution Source? <input type="checkbox"/>
C1. Are loading/unloading operations present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
If yes, are they uncovered and draining towards a storm drain inlet? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C2. Are materials stored outside? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell If yes, are they <input type="checkbox"/> Liquid <input type="checkbox"/> Solid Description: _____ ○					
Where are they stored? <input type="checkbox"/> grass/dirt area <input type="checkbox"/> concrete/asphalt <input type="checkbox"/> bermed area					
C3. Is the storage area directly or indirectly connected to storm drain (circle one)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
C4. Is staining or discoloration around the area visible? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
C5. Does outdoor storage area lack a cover? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
C6. Are liquid materials stored without secondary containment? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
C7. Are storage containers missing labels or in poor condition (rusting)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
D. WASTE MANAGEMENT <input type="checkbox"/> N/A (Skip to part E)					Observed Pollution Source? <input type="checkbox"/>
D1. Type of waste (check all that apply): <input type="checkbox"/> Garbage <input type="checkbox"/> Construction materials <input type="checkbox"/> Hazardous materials ○					
D2. Dumpster condition (check all that apply): <input type="checkbox"/> No cover/Lid is open <input type="checkbox"/> Damaged/poor condition <input type="checkbox"/> Leaking or evidence of leakage (stains on ground) <input type="checkbox"/> Overflowing ○					
D3. Is the dumpster located near a storm drain inlet? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell ○					
If yes, are runoff diversion methods (berms, curbs) lacking? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
E. PHYSICAL PLANT <input type="checkbox"/> N/A (Skip to part F)					Observed Pollution Source? <input type="checkbox"/>
E1. Building: Approximate age: _____ yrs. Condition of surfaces: <input type="checkbox"/> Clean <input type="checkbox"/> Stained <input type="checkbox"/> Dirty <input type="checkbox"/> Damaged ○					
Evidence that maintenance results in discharge to storm drains (staining/discoloration)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know ○					

*Index: ○ denotes potential pollution source; ☐ denotes confirmed polluter (evidence was seen)

HSI

I-6

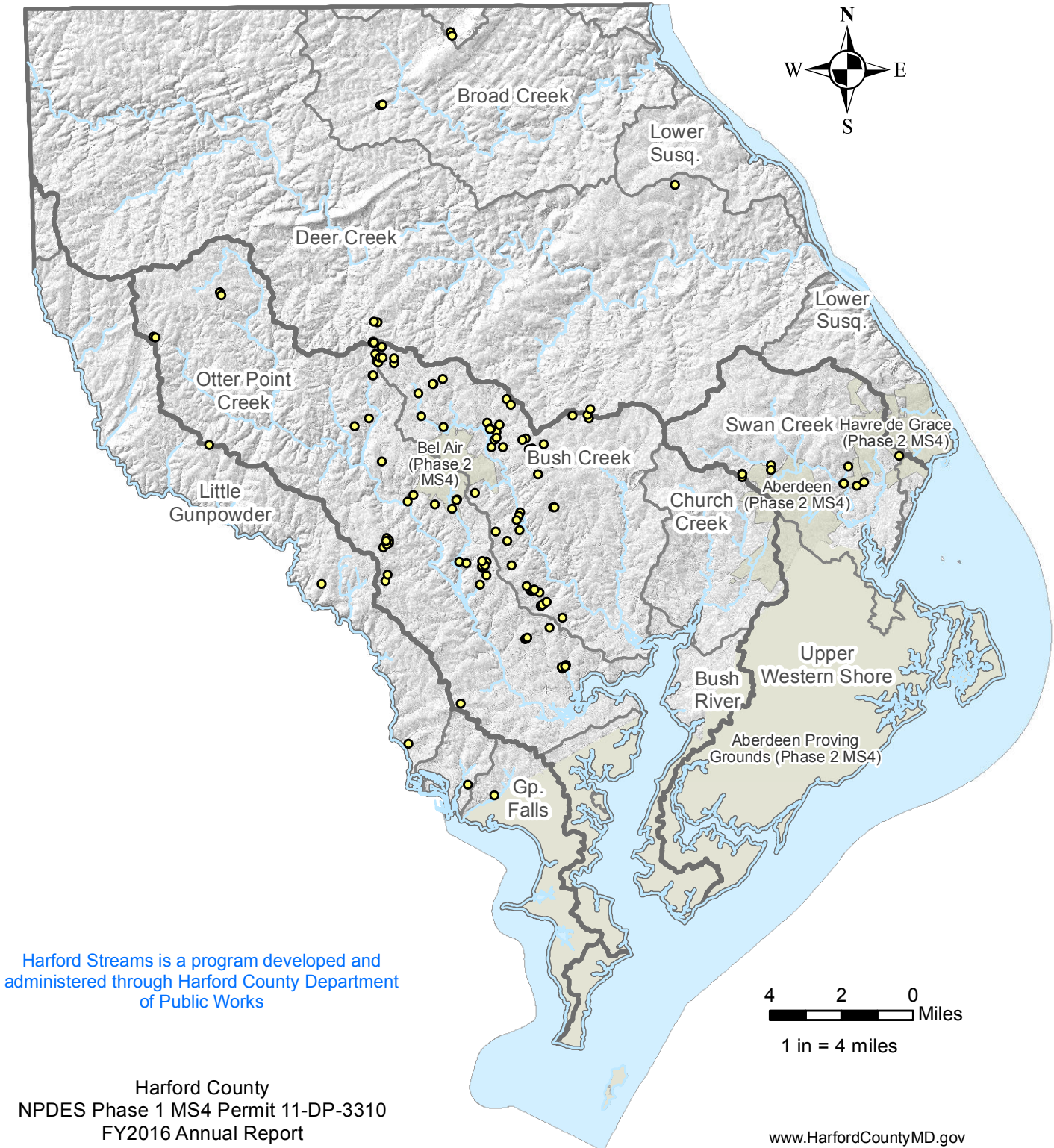
Appendix D3

Harford County, MD Department of Public Works Watershed Protection and Restoration

Inspected Stormdrain Outfalls (July 1, 2016 - June 30, 2017)



Barry Glassman
County Executive



Harford Streams is a program developed and
administered through Harford County Department
of Public Works

Harford County
NPDES Phase 1 MS4 Permit 11-DP-3310
FY2016 Annual Report

Printed 12/2017

www.HarfordCountyMD.gov
HarfordStreams@HarfordCountyMD.gov
[www.Facebook.com/HarfordStreams](https://www.facebook.com/HarfordStreams)
(410) 638-3217

Harford County Department of Public Works

Outfall Inspections between July 1, 2016 and June 30, 2017

Barry Glassman
County Executive

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF000013	5/16/2017	1	N								2017
OF000015	1/27/2017	1	N								2017
OF000015	2/8/2017	1	N								2017
OF000038	9/6/2016	1	N								2017
OF000055	8/10/2016	1	N								2017
OF000056	8/9/2016	1	N								2017
OF000056	5/18/2017	1	N								2017
OF000074	9/6/2016	1	Y	0.005885778	62.6	7.38	0	0	0.1	0	2017
OF000074	9/8/2016	2	Y	0.004708622	63.68	7.12	0	0	0.05	0	2017
OF000110	8/26/2016	1	N								2017
OF000111	9/14/2016	1	N								2017
OF000112	8/26/2016	1	N								2017
OF000119	8/31/2016	1	Y	0.001765733	68.54	7.34	0	0	0.1	0	2017
OF000119	9/6/2016	2	Y	0.0005885778	63.14	7.75	0	0	0.1	0	2017
OF000125	9/14/2016	1	N								2017
OF000129	10/12/2016	1	N								2017
OF000130	10/12/2016	1	N								2017
OF000141	9/9/2016	1	Y	0.0002942889	67.46	6.64	0	0	0.05	0	2017
OF000141	9/13/2016	2	Y	0.0002942889	66.92	7.25	0	0	0.15	0	2017
OF000150	9/9/2016	1	Y	0.001177156	72.5	7.02	0	0.05	0.05	0	2017

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF000150	9/13/2016	2	Y	0.0005885778	68.9	7.43	0	0	0.05	0	2017
OF000307	9/8/2016	1	Y	0.007062933	60.62	6.84	0	0	0.1	0	2017
OF000307	9/9/2016	2	Y	0.004708622	62.78	6.83	0	0	0.05	0	2017
OF000315	10/12/2016	1	N								2017
OF000325	10/12/2016	1	N								2017
OF000326	5/9/2017	1	N								2017
OF000409	5/16/2017	1	N								2017
OF000412	5/16/2017	1	N								2017
OF000414	8/26/2016	1	N								2017
OF000416	8/26/2016	1	N								2017
OF000468	5/10/2017	1	N								2017
OF000585	8/31/2016	1	N								2017
OF000647	9/8/2016	1	Y	0.0005885778	71.96	6.91	0	0	0.1	0	2017
OF000647	9/9/2016	2	Y	0.0005885778	67.64	6.17	0	0	0.1	0	2017
OF000691	9/8/2016	1	N								2017
OF000698	5/10/2017	1	N								2017
OF000703	5/10/2017	1	N								2017
OF000753	5/10/2017	1	N								2017
OF000874	6/13/2017	1	N								2017
OF000875	6/13/2017	1	N								2017
OF000887	1/12/2017	1	N								2017
OF000888	1/12/2017	1	N								2017
OF000949	2/8/2017	1	N								2017
OF000950	2/8/2017	1	N								2017

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF000951	2/8/2017	1	N								2017
OF000952	5/16/2017	1	N								2017
OF000953	5/16/2017	1	N								2017
OF000961	5/4/2017	1	N								2017
OF001117	4/10/2017	1	N								2017
OF001120	5/16/2017	1	N								2017
OF001121	5/16/2017	1	N								2017
OF001227	11/23/2016	1	N								2017
OF001228	11/23/2016	1	N								2017
OF001266	9/6/2016	1	Y	0.0005885778	55.94	6.15	0.05	0	0.1	0	2017
OF001266	9/8/2016	2	Y	0.0002942889	56.3	6.6	0.05	0	0.1	0	2017
OF001271	9/6/2016	1	N								2017
OF001277	8/10/2016	1	N								2017
OF001278	9/14/2016	1	N								2017
OF001279	8/10/2016	1	N								2017
OF001284	8/9/2016	1	N								2017
OF001286	8/9/2016	1	N								2017
OF001286	4/11/2017	1	N								2017
OF001293	8/10/2016	1	N								2017
OF001294	8/16/2016	1	N								2017
OF001306	8/26/2016	1	N								2017
OF001341	6/19/2017	1	N								2017
OF001349	5/18/2017	1	N								2017
OF001350	6/2/2017	1	N								2017

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF001372	6/19/2017	1	N								2017
OF001533	1/12/2017	1	N								2017
OF001562	5/10/2017	1	N								2017
OF001573	4/11/2017	1	N								2017
OF001658	8/26/2016	1	N								2017
OF001659	8/26/2016	1	N								2017
OF001672	9/8/2016	1	N								2017
OF001681	5/24/2017	1	N								2017
OF001718	2/8/2017	1	N								2017
OF001719	2/8/2017	1	N								2017
OF001720	5/10/2017	1	N								2017
OF001721	5/10/2017	1	N								2017
OF001738	9/14/2016	1	N								2017
OF001739	8/26/2016	1	N								2017
OF001756	6/14/2017	1	N								2017
OF001757	6/14/2017	1	N								2017
OF001762	6/14/2017	1	N								2017
OF001764	6/14/2017	1	N								2017
OF001770	6/14/2017	1	N								2017
OF001771	6/14/2017	1	N								2017
OF001773	6/14/2017	1	N								2017
OF001774	6/14/2017	1	N								2017
OF001775	6/14/2017	1	N								2017
OF001789	5/4/2017	1	N								2017

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF001793	5/4/2017	1	N								2017
OF001794	5/4/2017	1	N								2017
OF001822	6/15/2017	1	N								2017
OF001848	5/4/2017	1	N								2017
OF001850	5/4/2017	1	N								2017
OF001851	5/4/2017	1	N								2017
OF001865	8/25/2016	1	N								2017
OF001872	9/9/2016	1	N								2017
OF001905	5/17/2017	1	N								2017
OF001906	5/17/2017	1	N								2017
OF001907	5/17/2017	1	N								2017
OF001908	6/20/2017	1	N								2017
OF001913	5/16/2017	1	N								2017
OF001914	9/14/2016	1	Y	0.0008828667	68	7.42	0	0	0.05	0	2017
OF001914	9/15/2016	2	Y	0.0008828667	65.84	6.69	0	0	0.05	0	2017
OF001935	5/18/2017	1	N								2017
OF001955	9/8/2016	1	N								2017
OF001973	5/10/2017	1	N								2017
OF001974	9/13/2016	1	Y	0.0005885778	68.36	7.7	0	0	0.05	0	2017
OF001974	9/14/2016	2	Y	0.0005885778	68.9	7.57	0	0	0.1	0	2017
OF001975	9/13/2016	1	N								2017
OF001975	5/10/2017	1	N								2017
OF001982	9/13/2016	1	N								2017
OF002252	7/25/2016	1	N								2017

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF002295	11/8/2016	1	Y	0.001177156	59.18	7.54	0	0	0	0	2017
OF002295	11/14/2016	2	Y	0.001177156	58.1	7.6	0	0	0	0	2017
OF002356	11/14/2016	1	N								2017
OF002520	8/31/2016	1	Y	0.0002942889	75.2	6.94	0	0	0.1	0	2017
OF002520	9/6/2016	2	Y	0.0001471444	71.78	7.21	0	0	0.1	0	2017
OF002560	8/31/2016	1	N								2017
OF002646	11/23/2016	1	N								2017
OF002656	8/26/2016	1	N								2017
OF002786	8/10/2016	1	N								2017
OF002820	8/10/2016	1	N								2017
OF002837	11/23/2016	1	N								2017
OF002865	5/4/2017	1	N								2017
OF002866	5/4/2017	1	N								2017
OF002867	2/8/2017	1	N								2017
OF002867	5/4/2017	1	N								2017
OF002867	6/16/2017	1	N								2017
OF002936	1/27/2017	1	N								2017
OF002938	1/27/2017	1	N								2017
OF002958	8/31/2016	1	N								2017
OF002972	8/10/2016	1	N								2017
OF002984	8/10/2016	1	N								2017
OF002990	8/10/2016	1	N								2017
OF003230	6/14/2017	1	N								2017
OF003233	6/14/2017	1	N								2017

OUTFALL	DATE	TEST #	OBSERVED FLOW	FLOW cfs	WATER TEMP F	pH	PHENOLS	CHLORINE	DETERGENTS	COPPER	REPORTING YEAR
OF003256	8/9/2016	1	N								2017
OF003302	8/31/2016	1	N								2017
OF003330	7/26/2016	1	N								2017
OF003334	9/14/2016	1	N								2017
OF003336	5/15/2017	1	N								2017
OF003337	5/15/2017	1	N								2017
OF003338	5/15/2017	1	N								2017
OF003339	7/26/2016	1	N								2017
OF003339	5/15/2017	1	N								2017
OF003340	7/26/2016	1	N								2017

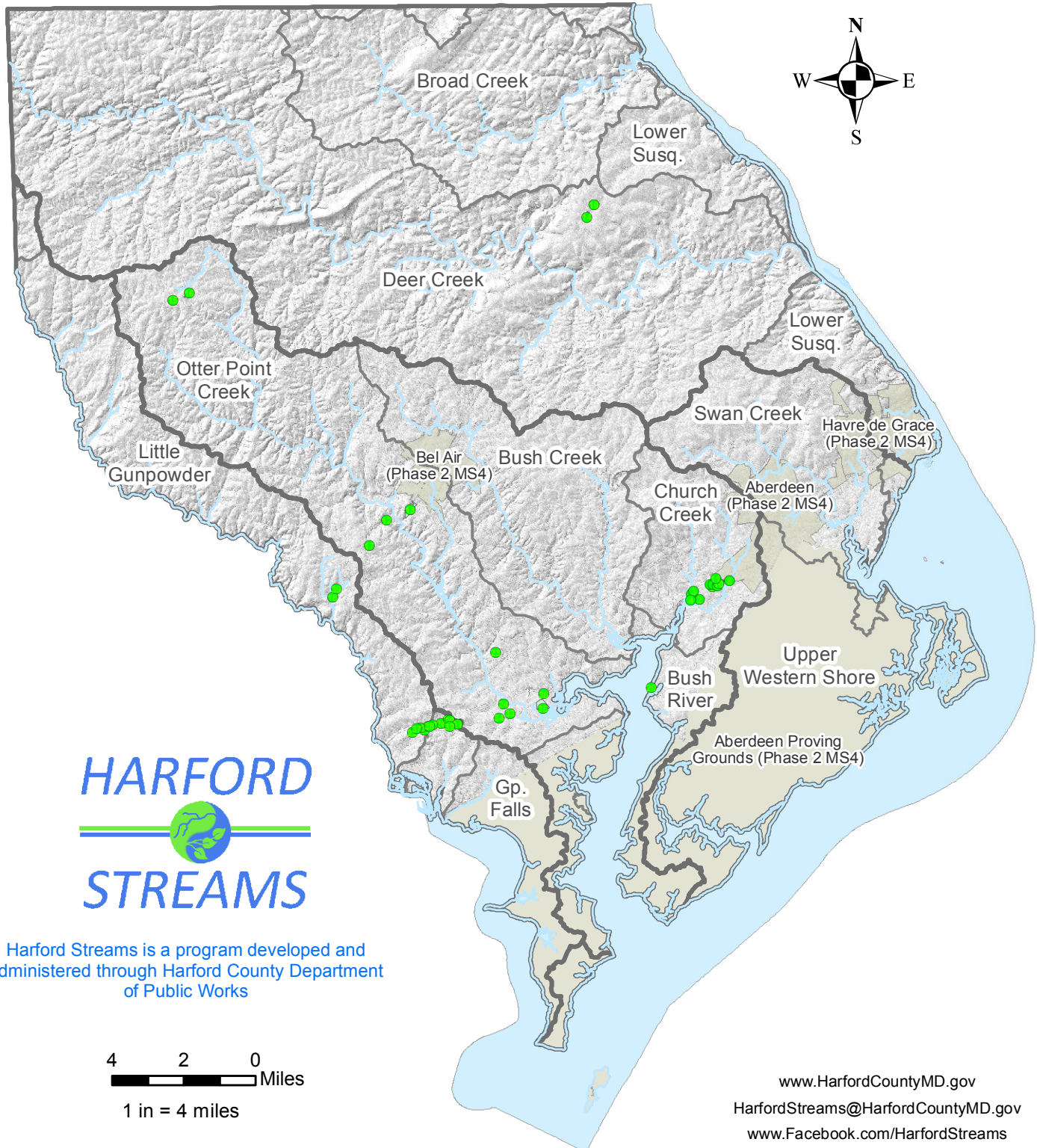
Appendix D3

Harford County, MD Department of Public Works Watershed Protection and Restoration

Active Hotspot Investigations (July 1, 2016 - June 30, 2017)



Barry Glassman
County Executive



NPDES Phase 1 MS4 Permit 11-DP-3310

Printed 12/2017

Harford County Department of Public Works
Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00032	Bel Air Auto Auction
TaxID	03058727	709 BEL AIR RD

CaseID 201400032 Opened 4/9/2014 Closed

CaseNotes

Activity Date	Activity	Outcome
3/31/2015	Site visit	Source tracking inconclusive
2/2/2015	Letter from property owner	Remediation completed
1/15/2015	Letter to property owner	Remediation requested
4/9/2014	Random screening	Confirmed hotspot

HotspotID	00221	Dietz Auto Repair / Dicks Plumbing / Bent Just Right
TaxID	02041987	2817 Bel Air Rd

CaseID 201500221 Opened 12/16/2015 Closed 10/5/2016

CaseNotes Uncovered liquid storage without secondary containment / overflowing dumpster / outdoor vehicle washing

Activity Date	Activity	Outcome
10/5/2016	Letter to property owner	Case closed
10/5/2016	Site visit	Remediation completed
2/29/2016	Call from property owner	Remediation planned
2/11/2016	Letter to property owner	Remediation requested
12/16/2015	Random screening	Confirmed hotspot

HotspotID	00227	Fork Auto Body
TaxID	03040313	2705 Bel Air Rd

CaseID 201500227 Opened 12/16/2015 Closed

CaseNotes

Activity Date	Activity	Outcome
3/21/2016	Memo to DPW Director	Follow up needed
3/17/2016	Site visit	Follow up needed
3/4/2016	Memo to DPW Director	Information requested
2/4/2016	Letter from property owner	Information requested

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



1/27/2016	Letter to property owner	Remediation requested
12/16/2015	Random screening	Confirmed hotspot

HotspotID	00222	Bel Air Auto Service - BP Fallston
TaxID	03064581	1515 Bel Air Rd

CaseID	201500222	Opened	12/18/2015	Closed	10/10/2016
CaseNotes	Uncovered liquid storage without secondary containment				

Activity Date	Activity	Outcome
10/10/2016	Letter to property owner	Case closed
10/10/2016	Site visit	Remediation completed
1/29/2016	Letter to property owner	Remediation requested
12/18/2015	Random screening	Confirmed hotspot

HotspotID	00223	BP Jarrettsville
TaxID	04035208	1105 Baldwin Mill Rd

CaseID	201500223	Opened	12/30/2015	Closed	1/12/2017
CaseNotes	Unlabeled storage of liquids outdoors / evidence of spills and leaks / open dumpster				

Activity Date	Activity	Outcome
1/12/2017	Letter to property owner	Case closed
12/20/2016	Site visit	Remediation completed
8/2/2016	Report from consultant	Confirmed hotspot
12/30/2015	Random screening	Confirmed hotspot

HotspotID	00224	Ace Hardware / Jarrettsville Body & Fender / Ma-Jar Motors
TaxID	04062620	3803 Norrisville Rd

CaseID	201500224	Opened	12/31/2015	Closed	3/30/2017
CaseNotes	Uncovered liquid storage without secondary containment				

Activity Date	Activity	Outcome
3/30/2017	Letter to property owner	Case closed
3/29/2017	Site visit	Remediation completed
2/21/2017	Letter from property owner	Remediation planned

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



1/24/2017	Letter to property owner	Remediation requested
12/20/2016	Site visit	Remediation required
8/2/2016	Report from consultant	Confirmed hotspot
12/31/2015	Random screening	Confirmed hotspot

HotspotID	00225	Harford Tire - Street
TaxID	05030951	1205 Priestford Rd

CaseID	201600225	Opened 1/14/2016	Closed 12/2/2016
CaseNotes	Uncovered liquid storage without secondary storage		

Activity Date	Activity	Outcome
12/2/2016	Letter to property owner	Case closed
12/2/2016	Site visit	Remediation completed
11/22/2016	Call from property owner	Site visit requested
10/25/2016	Letter to property owner	Remediation requested
10/24/2016	Site visit	Remediation required
8/2/2016	Report from consultant	Confirmed hotspot
1/14/2016	Random screening	Confirmed hotspot

HotspotID	00226	Waste Industries
TaxID	03228991	1826 Bramble Brook La

CaseID	201600226	Opened 9/29/2016	Closed 9/30/2016
CaseNotes	Oil spill from trash truck on route		

Activity Date	Activity	Outcome
9/30/2016	Referred to HAZMAT	Case closed
9/29/2016	Call from property owner	Refer to HAZMAT

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00228	2106 Park Beach Dr
TaxID	02067323	2106 Park Beach Dr
CaseID	201600228	Opened 10/18/2016 Closed 10/20/2016
CaseNotes	Dumping cat litter by waterway	
Activity Date	Activity	Outcome
10/20/2016	Letter to property owner	Case closed
10/19/2016	Site visit	Education required
10/18/2016	Citizen complaint	Follow up needed
HotspotID	00122	Sullivan's Garage
TaxID	01062697	609 Pulaski Highway
CaseID	201600122	Opened 11/14/2016 Closed 11/17/2016
CaseNotes	Standing water along roadway	
Activity Date	Activity	Outcome
11/17/2016	Email to MDE	Case closed
11/16/2016	Site visit	Not a hotspot
11/14/2016	Email from MDE	Follow up needed
HotspotID	00233	United Rentals
TaxID	01159046	497 Pulaski Highway
CaseID	201600233	Opened 12/6/2016 Closed 5/10/2017
CaseNotes	Evidence of stains / outdoor car washing	
Activity Date	Activity	Outcome
5/5/2017	Letter to property owner	Case closed
5/3/2017	Site visit	Not a hotspot
12/6/2016	Random screening	Confirmed hotspot

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00236	JC Discount Tire
TaxID	01038753	2102 Pulaski Highway

CaseID 201600236 Opened 12/6/2016 Closed 10/5/2017

CaseNotes Outdoor liquid storage, tire storage, unable to enter property

Activity Date	Activity	Outcome
10/5/2017	Letter to property owner	Case closed
10/3/2017	Site visit	Remediation completed
7/20/2017	Letter to property owner	Appointment for site visit requested
6/21/2017	Call to property owner	Consult with County Attorney
6/6/2017	Site visit	Make appointment with owner
12/6/2016	Random screening	Follow up needed

HotspotID	00093	Target - Abingdon
TaxID	01299875	403 Constant Friendship Blvd

CaseID 201600093 Opened 12/13/2016 Closed 12/16/2016

CaseNotes Uncovered salt pile in parking lot

Activity Date	Activity	Outcome
12/16/2016	Site visit	Case closed
12/15/2016	Email from contractor	Remediation completed
12/13/2016	Site visit	Remediation requested in person
12/13/2016	Citizen complaint	Site visit required

HotspotID	00231	Amrein Foods
TaxID	01148958	704 Pulaski Highway

CaseID 201500231 Opened 12/13/2016 Closed 4/19/2017

CaseNotes

Activity Date	Activity	Outcome
4/19/2017	Letter to property owner	Case closed
4/5/2017	Call from property owner	Letter to property owner
4/4/2017	Site visit	Letter to property owner

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



12/13/2016 Random screening Site visit required

HotspotID	00232	Anderson Hardware
TaxID	01001876	900 Pulaski Hwy

CaseID 201600232 Opened 12/13/2016 Closed 7/11/2017
CaseNotes

Activity Date	Activity	Outcome
7/11/2017	Letter to property owner	Case closed
7/10/2017	Site visit	Remediation completed
5/15/2017	Letter from property owner	Remediation plan submitted
4/19/2017	Letter to property owner	Remediation requested
4/4/2017	Site visit	Remediation required
12/13/2016	Random screening	Follow up needed

HotspotID	00235	First Automotive, et. Al.
TaxID	01236164	710 Pulaski Highway

CaseID 201600235 Opened 12/13/2016 Closed 5/24/2017
CaseNotes

Activity Date	Activity	Outcome
5/24/2017	Letter to property owner	Case closed
5/23/2017	Site visit	Remediation completed
5/18/2017	Call from property owner	Site visit with property owner
5/15/2017	Letter to property owner	Remediation requested
5/3/2017	Site visit	Remediation required
12/13/2016	Random screening	Follow up needed

Harford County Department of Public Works
Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00239	Auto Auction of Baltimore
TaxID	01028367	1116 S Mountain Rd

CaseID 201600239 Opened 12/13/2016 Closed

CaseNotes

Activity Date	Activity	Outcome
7/31/2017	Email from operator	SWPPP received
6/29/2017	Call from property owner	SWPPP being prepared
6/16/2017	Site visit	Remediation required
12/13/2016	Random screening	follow up needed

HotspotID	00240	Hurley's Golf Carts
TaxID	01018329	1114 Mountain Rd

CaseID 201600240 Opened 12/13/2016 Closed

CaseNotes

Activity Date	Activity	Outcome
6/26/2017	Letter to property owner	Remediation requested
6/16/2017	Site visit	Remediation required
12/13/2016	Random screening	Follow up needed

HotspotID	00242	7-11 Rt 40 Joppa
TaxID	01298992	602 Pulaski Highway

CaseID 201600242 Opened 12/13/2016 Closed

CaseNotes

Activity Date	Activity	Outcome
8/15/2017	Letter to business address	Remediation requested
6/27/2017	Letter to property owner	Remediation requested
6/20/2017	Site visit	Not a hotspot
12/13/2016	Random screening	Follow up needed

Harford County Department of Public Works
Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00243	Exxon - Joppa
TaxID	01026437	1101 Pulaski Highway
CaseID	201600243	Opened 12/13/2016 Closed 6/20/2017
CaseNotes		
Activity Date	Activity	Outcome
6/20/2017	Site visit	Not a hotspot
12/13/2016	Random screening	Follow up needed
HotspotID	00246	Maryland Used Auto Parts
TaxID	01036637	1001-1009 Pulaski Highway
CaseID	201600246	Opened 12/13/2016 Closed 6/8/2017
CaseNotes	Property requires Industrial Discharge Permit	
Activity Date	Activity	Outcome
6/8/2017	Industrial Discharge Permit 12SR3120 issued	Case closed
5/15/2017	Requested information from MDE	NOI submitted. Application incomplete. 12SW permit p
12/13/2016	Random screening	Follow up needed
HotspotID	00237	Giovannis Restaurant
TaxID	01081748	2101 Pulaski Highway
CaseID	201600237	Opened 12/15/2016 Closed 6/19/2017
CaseNotes		
Activity Date	Activity	Outcome
6/19/2017	Letter to property owner	Case closed
6/6/2017	Site visit	Not a hotspot
12/15/2016	Random screening	Follow up needed

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00244	Gerar Auto Sales, et.al.
TaxID	01060317	2002-2012 Pulaski Hwy

CaseID 201600244 Opened 12/20/2016 Closed 8/29/2017

CaseNotes

Activity Date	Activity	Outcome
8/29/2017	Letter to property owner	Case closed
8/25/2017	Site visit	Remediation completed
8/2/2017	Letter to property owner	Remediation requested
6/30/2017	Site visit	Remediation required
12/20/2016	Random screening	Follow up needed

HotspotID	00238	Home Depot - Edgewood
TaxID	01088483	2703 Pulaski Highway

CaseID 201600238 Opened 12/29/2016 Closed 6/6/2017

CaseNotes

Activity Date	Activity	Outcome
6/6/2017	Site visit	Not a hotspot-Case closed
12/29/2016	Random screening	Follow up needed

HotspotID	00245	Harford Rentals
TaxID	02012320	2704 Pulaski Highway

CaseID 201600245 Opened 12/29/2016 Closed 6/30/2017

CaseNotes

Activity Date	Activity	Outcome
6/30/2017	Site visit	Not a hotspot. Case closed
12/29/2016	Random screening	Follow up needed

Harford County Department of Public Works

Hotspot Cases Active between July 1, 2016 and June 30, 2017



HotspotID	00234	Sherwood Concessions
TaxID	01038656	514 Pulaski Highway

CaseID 201700234 Opened 1/12/2017 Closed 10/5/2017
CaseNotes uncovered liquid storage, oil leaks

Activity Date	Activity	Outcome
10/5/2017	Letter to property owner	Case closed
10/3/2017	Site visit	Remediation completed
7/3/2017	Letter to property owner	Remediation requested
5/15/2017	Letter to property owner	Remediation requested
5/3/2017	Site visit	Remediation required
1/12/2017	Random screening	Follow up needed

HotspotID	00241	Diesel and Auto Solutions et.al.
TaxID	01013122	706-B Pulaski Highway

CaseID 201700241 Opened 2/23/2017 Closed 6/27/2017
CaseNotes

Activity Date	Activity	Outcome
6/27/2017	Letter to property owner	Case closed
6/20/2017	Site visit	Not a hotspot
2/23/2017	Random screening	Follow up needed



Green Choices ... Healthy Streams

Harford Streams is a program developed and administered through Harford County Department of Public Works

**HARFORD COUNTY
ILLICIT DISCHARGE
INSPECTION PROGRAM:
2016 SUMMARY REPORT
MONITORING PERIOD
MAY 2016 - JUNE 2017**

Prepared for

Harford County
Department of Public Works
Division of Construction Management
212 South Bond Street
Bel Air, Maryland 21014

Prepared by

Versar, Inc.
9200 Rumsey Road, Suite 1
Columbia, MD 21045

FINAL: December 2017

TABLE OF CONTENTS

	Page
ACRONYMS	VI
ABBREVIATIONS AND UNITS OF MEASURE.....	VI
1.0 INTRODUCTION.....	1-1
2.0 METHODS	2-1
2.1 ILLICIT DISCHARGE DETECTION	2-1
2.1.1 IDDE Site Selection	2-1
2.1.2 IDDE Field Screening Procedures	2-1
2.1.3 Discharge Classification	2-2
2.2 COMMERCIAL AND INDUSTRIAL FACILITY INSPECTIONS	2-4
2.2.1 Facility Site Selection	2-4
2.2.2 Commercial and Industrial Facility Field Inspections	2-4
3.0 RESULTS	3-1
3.1 OUTFALL INSPECTIONS	3-1
3.1.1 Summary of Screening Results	3-1
3.1.2 Outfalls Requiring Maintenance	3-2
3.2 COMMERCIAL AND INDUSTRIAL FACILITY INSPECTIONS	3-2
4.0 CONCLUSIONS	4-1
5.0 REFERENCES.....	5-1
 APPENDICES	
A OUTFALLS SCREENED DURING 2016–2017	A-1
B DATA SHEETS FOR DRY WEATHER SCREENING.....	B-1
C DATA SHEETS FOR FACILITY INSPECTIONS	C-1
D MAPS OF OUTFALLS SCREENED DURING 2016–2017	D-1
E MAPS OF FACILITIES INSPECTED DURING 2016–2017	E-1

LIST OF TABLES

Table	Page
2-1. Analytes, non-chemical parameters, testing ranges, and action criteria for dry weather discharge screening in Harford County	2-3
2-2. Land use codes used to select facilities for hotspot investigations	2-4
3-1. Summary of Harford County dry weather IDDE screening results for flowing, Versar's results only, 2016 reporting year	3-1
3-2. Initial and re-test field screening results for outfalls with a low likelihood for illicit connection	3-2
3-3. Maintenance problems identified during outfall screening	3-2
3-4. Inspection results for facilities found to be not a hotspot	3-4
3-5. Inspection results for facilities found to be a potential hotspot	3-5
3-6. Inspection results for facilities found to be a confirmed hotspot.....	3-9

ACRONYMS

DO	Dissolved Oxygen
GIS	Geographic Information System
GPS	Global Positioning System
HSI	Hotspot Site Investigation
IDDE	Illicit Discharge Detection and Elimination
IDP	Illicit Discharge Potential
MS4	Municipal Separate Storm Sewer System
MDE	Maryland Department of the Environment
NA	Not Applicable
NAD	North American Datum
NPDES	National Pollutant Discharge Elimination System
SW	Stormwater

ABBREVIATIONS AND UNITS OF MEASURE

Cl	Chlorine
cm	Centimeter
Cu	Copper
l	Liter
mg	Milligram
mS	Millisiemens
NTU	Nephelometric Turbidity Unit
O ₂	Oxygen
unk	Unknown

1.0 INTRODUCTION

On an annual basis, Harford County conducts inspections of its Municipal Separate Storm Sewer System (MS4) outfalls and commercial and industrial facilities within its jurisdiction to detect discharges to the MS4 network from non-stormwater sources, and to identify pollution sources from activities on commercial and industrial parcels. Such inspections are a requirement of the County's National Pollutant Discharge Elimination System (NPDES) permit. They reflect the County's ongoing commitment to the identification, isolation, and correction of illicit discharges into the MS4 network and upland polluting conditions threatening the health of county waterways. The County conducts outfall screening during dry weather conditions to target flows that are specifically not associated with rain events. The County is required to screen 100 outfalls under its jurisdiction annually.

Dry weather discharges are defined as any non-stormwater flow in the MS4 which may arise from one or more of the following causes (Brown et al. 2004):

- Inadvertent connection of sewage and septic flows;
- Washwater flows, such as residential gray water (laundry) discharges; water from commercial car washes, fleet washing, or commercial laundries; and floor washing to shop drains;
- Liquid wastes such as oil, paint, and process water that enter the storm drain system;
- Tap (potable) water;
- Landscape irrigation; and
- Groundwater or spring water.

Illicit discharges are those dry weather flows that contain pollutants or pathogens. Water quality testing is used to distinguish illicit discharges (sewage, septic flow, washwater, tap water additives, and wastes) from cleaner discharges such as groundwater.

During 2016, Harford County's construction inspectors conducted the initial assessments for pre-selected and randomly selected outfalls during dry weather to identify outfalls with possible illicit discharges from normal stormwater runoff and discharges from other, natural sources, such as groundwater. The County crews reported any outfall that was found to have flowing discharge during dry weather conditions to the County consultant, Versar, Inc. (Versar) for a complete assessment, including physical inspections and chemical tests. Versar staff also conducted a retest for any outfall that was flowing during the first (Versar) inspection.

To address potential upland sources of pollution that may contribute to decreased water quality in receiving streams, the County completes a required 50 commercial and industrial inspections on an annual basis. Commercial and industrial parcels are potential pollutant "hotspots" because they offer a high potential for illicit discharges to the MS4. Illicit discharge

from “hotspots” may be a consequence of one or more of the following conditions (Wright et al. 2005):

- Outdoor material storage (e.g., unprotected storage of pesticides, solvents, bulk materials, or hazardous materials);
- Vehicle operations (e.g., outdoor maintenance, uncovered fueling operations);
- Uncovered storage of trash or presence of leaking dumpsters;
- Condition of the physical plant (e.g., connection of downspouts, poor condition of building(s), poor condition of pavement); and
- Inappropriate landscape management (e.g., inadequate or inappropriate turf management, presence of non-target irrigation), and condition of stormwater infrastructure (e.g., absence of stormwater controls, litter in gutters).

During December 2016 to February 2017, Versar field teams visited 50 commercial and industrial parcels to conduct visual surveys of storage practices, vehicle operations, physical plant condition, waste management, and landscape management practices to determine whether a confirmed hotspot existed on the property at the time of the survey. If an acute or ongoing pollution problem was found and reported, staff from the County conducted a thorough second investigation of the conditions at the parcel to identify and initiate the necessary steps to eliminate the pollution source. Additional measures that the County may take to raise awareness of stormwater pollution include public outreach and education.

This report documents the field results for Harford County’s 2016 illicit discharge and commercial and industrial hotspot site inspection program. The following sections describe the site selection protocol for Illicit Discharge Detection and Elimination (IDDE) target outfalls, field inspection methods, and results of field inspection as well as source determination of confirmed pollution problems located within the MS4, if applicable, or resulting from activities on commercial and industrial sites. Complete results are provided in a Microsoft Access database that accompanies this report.

2.0 METHODS

2.1 ILLICIT DISCHARGE DETECTION

2.1.1 IDDE Site Selection

During the 2016 effort, Harford County staff conducted the majority of the outfall screening effort. The County did not draw upon the prioritized list of outfalls that had been used during the previous several years to identify outfalls for screening. County staff modified the outfall screening procedure to improve cost efficiency, increase the number of outfalls initially inspected for flowing discharge (up to 200 sites; twice the required number), and better utilize existing County resources. County staff selected a set of target outfalls by geographic region through desktop analysis, and provided the data within an iPad application for use in the field surveys. County staff also conducted random outfall screening near work assignment sites if time permitted. Staff collected identification, physical condition, and secondary illicit discharge indicator data at each outfall. County staff noted any flowing outfalls encountered during dry weather conditions and provided lists of the flowing outfalls to Versar in batches on a monthly basis for follow-up inspections and evaluation (outfalls discharging groundwater did not qualify for these follow-up inspections).

2.1.2 IDDE Field Screening Procedures

Versar staff received information from Harford County when crews had discovered a flowing outfall. Versar staff created a Geographic Information Systems (GIS) data set for the reported flowing outfalls in preparation for field visits for the 2016 survey. Staff used this digital data set and other data (e.g., aerial photography, stormwater infrastructure elements, streams, roads) to develop a map of each target outfall to assist field staff in locating the sites. Staff also converted the information in the Programmatic Outfall Tracking Spreadsheet to a digital file for the GIS, and installed this and other relevant data into a Trimble ProXT differential Global Positioning System (GPS) unit so that field staff could confirm the target outfalls on-site and identify the associated MS4 infrastructure; this facilitates tracking flowing water. Versar staff also created and installed electronic forms for recording data directly into the GPS during the field surveys (see Appendix B for data sheet elements).

Versar staff conducted field screening of outfalls in August, September, and November 2016. All sites were visited after at least a 24-hour dry weather period (i.e., a period involving less than 0.10 inches of precipitation that would otherwise mask improper discharges), as

required by the Dry Weather Screening Plan (Versar 2010). Dry weather screening included the following activities for each site:

- Locating the outfall using GPS coordinates provided to Versar by the County (Appendix A) and recording the “field” coordinates of the outfall on-site;
- Photographing the outfall;
- Inspecting the outfall and surrounding area for signs of damage, staining, vegetation growth, sedimentation, or erosion;
- Inspecting the outfall for physical evidence of dry weather flow;
- Performing water chemistry tests in the field if the outfall had a flowing discharge and performing cursory source tracking of any discharge; and
- For any outfall that exhibited flow, re-inspecting and re-testing the same site the following day, if feasible.

Field teams chemically tested dry weather discharge from outfalls using Chemetrics colorimetric field test kits. Teams used a Lamotte color kit to determine color in the effluent. Staff measured water quality parameters such as dissolved oxygen, pH, and specific conductivity with a YSI or an *In-situ* Troll multiparameter sonde. Staff calibrated the YSI daily prior to performing field investigations. Field teams calibrated the *In-situ* sonde, which features an optical dissolved oxygen probe, less often, but at intervals not longer than manufacturer specifications. Versar's (2010) Illicit Discharge Monitoring Program manual contains details on instrument operation instructions and calibration procedures.

At the end of each field day, Versar staff uploaded all electronic data from the GPS to Versar's computer network server. Field staff also uploaded digital photograph files from the field camera to Versar's server. Staff created back-up copies of the files on the server daily, in accordance with Versar's corporate safe data policy.

2.1.3 Discharge Classification

The illicit discharge monitoring program protocol includes water quality testing to determine detectable concentrations of one or more of a list of analytes: chlorine, copper, phenols, and surfactants (detergents); these results combined with the tested levels of other parameters guide the field teams through identifying and classifying an illicit discharge. The presence of chlorine can indicate either tap water leaking (e.g., from a broken supply pipe) or sewage. Source tracking and subsequent analyses can be used to further define the discharge. The presence of residual chlorine and copper with low turbidity but no odor can be used to classify the discharge as tap water. The presence of surfactants, copper, and residual chlorine can be used to classify the discharge as washwater. Discharges with no residual chlorine, and exhibiting low conductivity and turbidity can be classified as groundwater infiltration.

Field crews classified the likelihood that an outfall discharge may be illicit by evaluating the combination of testing results exceeding defined thresholds for each sample. Crews compared the results of screening tests to the criteria presented in Table 2-1 to assist in identifying the possible source of a suspected improper discharge or illicit connection. Discharges most likely to be illicit exceeded thresholds for both residual chlorine and copper or surfactants, those likely to be illicit exceeded for either chlorine or copper, and those less likely had exceeding levels for any other measured parameter.

Analyte	Effluent Type Indicated	Action Criterion	Minimum Detection Limit	Instrument Range	Kit or Probe
residual chlorine (Cl)	industrial, drinking water, sewage,	> 0.05 mg/l ^(a)	0.05 mg/l	0 to 5 mg/l	color comparator
color	sewage, washwater	> 20 color units	NA	NA	color kit
copper (Cu)	industrial	> 0.05 mg/l ^(a)	0.05 mg/l	0 to 10 mg/l	color comparator
phenols	dry cleaning	> 0.05 mg/l ^(a)	0.05 mg/l	0 to 12 mg/l	color comparator
turbidity	industrial, sewage, washwater	≥ 1000 NTU ^(b)	0 NTU	NA	sonde
surfactants (detergents)	sewage, washwater	> 0.25 mg/l (residential) ^(b)	0.15 mg/l	0.15 to 1 mg/l	single analyte meter
dissolved oxygen (DO)	sewage	NA	NA	NA	sonde
water temperature	sewage	> 23.9 C ^(c)	NA	NA	sonde
pH	industrial, washwater	≤ 5 (industrial) ^(b)	NA	0 to 14	sonde
conductivity	industrial	> 2 mS/cm (industrial) ^(b)	NA	NA	sonde
^(a) Exceedance criterion based on the test range of the field kit ^(b) Source: Brown et al. (2004) ^(c) Source: Baltimore County (2007) NA: Not Applicable					

2.2 COMMERCIAL AND INDUSTRIAL FACILITY INSPECTIONS

2.2.1 Facility Site Selection

The site selection for the 2016 facility inspections involved only commercial and industrial sites that had been visited for the IDDE program before 2011. By County request, Versar staff restricted possible target parcels to an area of interest along the U.S. Route 40 (Pulaski Highway) corridor that included the areas of Joppa and Edgewood, Maryland. Staff submitted the proposed target parcels to Harford County for approval. After removing parcels that County staff rejected, Versar staff compiled a set of 51 parcels to be inspected for potential polluting influences on the MS4 network sufficient to be classified as pollution source "hotspots." In general, the selection process for the program includes a subset of possible land use categories to target those uses that are subjectively determined to have the highest pollution potential; the descriptions of the refined list are presented in Table 2-2. Versar staff created field maps of individual or clustered target parcels at a scale which would enable field teams to distinguish features on the aerial photographs and to sketch features of interest directly on the maps.

Table 2-2. Land use codes used to select facilities for hotspot investigations	
Land Use Code	Description
2110	Automobile sales or service establishment (towing)
2120	Gasoline service (includes associated convenience store)
2140	Consumer goods, other
2230	Scientific and technical services
3100	Manufacturing
3200	Warehouse and storage and distribution
4140	Truck and freight transportation services
7200	Machinery and heavy construction
7300	Special trade contractor (installation or repair services)
8500	Retail and industrial
8700	Other mixed uses
9600	Vacant (with building)
9700	Unimproved
9901	Outdoor storage for an adjacent property

2.2.2 Commercial and Industrial Facility Field Inspections

Versar field teams conducted Hotspot Site Investigations (HSIs) at the target commercial and industrial parcels using methods set forth in Wright et al. (2005) and modified for Harford County. Versar completed the HSIs during the period December 2016 to February 2017. The field teams restricted their activities in evaluating parcels chosen from the desktop procedure

outlined above to observing conditions at each target site from the vantage points of their vehicles (i.e., “windshield” surveys) or performing limited investigations on foot. In general, prior to the inspection and when practical, staff announced themselves to property managers or employees and presented the letter of introduction provided by the County for the surveys. To document conditions in parcels with inaccessible equipment or vehicle storage areas (due to enclosures), field teams surveyed the equipment and conditions from a nearby area and noted and photographed visible signs of any potential pollution problems; teams then parked elsewhere and completed the HSI field data sheets.

Field teams conducted HSIs using the inspection criteria on the HSI field data sheet (Appendix C) as a guide. Teams documented conditions at each site by filling in the forms and taking photographs. Versar staff notified the County soon after the inspections regarding the status of any parcel that exhibited obvious pollution problems (i.e., “confirmed” hotspots) during the site visits, as determined from guidelines defined on the field data sheets. Additionally, field crews inspected parcels for the presence of any above-ground waste oil tanks of or exceeding 1,000-gallon capacity or fuel oil tanks of or exceeding 10,000-gallon capacity; these tanks are regulated by the Maryland Department of the Environment (MDE). MDE also has the right to require an oil storage facility of less than 10,000-gallon capacity to be stored with secondary containment if the facility is in a location likely to pollute the waters of the state in the event of a leak or a spill.

Versar personnel completed HSI forms for each target site, noting conditions evident for storage, waste, buildings and grounds, and stormwater facilities: on the form, filled circles indicated potential sources of pollution, and checked boxes indicated observed polluting conditions. Field teams tallied the filled-in circles and checked boxes for each HSI form and used the results to rate the hotspot status according to the following scale:

- Fewer than 5 filled circles and no boxes checked: Not a hotspot
- 5 to 10 filled circles and no boxes checked: Potential hotspot
- 10 to 15 filled circles or 1 box checked, or both: Confirmed hotspot
- More than 15 filled circles or 2 or more boxes checked, or both: Severe hotspot

3.0 RESULTS

3.1 OUTFALL INSPECTIONS

3.1.1 Summary of Screening Results

Harford County staff screened 233 MS4 outfalls during the 2016 reporting period; of these, Versar staff tested 28 outfalls that the County staff had reported as flowing during site inspections starting in May 2016. Versar staff conducted field assessments and tests of the selected flowing outfalls from August 31 to November 14, 2016. Table 3-1 presents a summary of the results of Versar's IDDE dry weather screening activities. A full set of screening data are contained in a Microsoft Access database that accompanies this report.

Table 3-1. Summary of Harford County dry weather IDDE screening results for flowing outfalls, Versar's results only, 2016 reporting year						
Watershed/ Subwatershed	Outfalls Visited and Screened	Target outfalls Not Screened	Flowing Outfalls Tested and Retested	Outfalls with Discharge Less Likely to be Illicit	Outfalls with Discharge More Likely to be Illicit	Outfalls with Discharge Most Likely to be Illicit
Atkisson Reservoir	9	0	4	0	0	0
Bush River	2	0	0	0	0	0
Bynum Run	15	0	6	0	0	0
Gunpowder River	1	0	1	1 (temperature)	0	0
Little Gunpowder Falls	1	0	0	0	0	0
Lower Winters Run	0	0	0	0	0	0
Total	28	0	11	1	0	0

All of the 28 sites that the County had submitted for further investigation were subsequently successfully visited by Versar field staff. In 2016, Versar staff did not include additional searches for nearby outfalls or new outfalls; this activity has been part of the field protocols in previous monitoring years before 2015. Of the 28 outfalls screened, Versar field teams found 11 to be flowing; teams conducted tests at these sites, and returned later to repeat the screening steps, according to protocol. Appendix D contains maps showing the locations of the 28 investigated sites.

Field staff also performed a cursory source tracking of flowing outfalls using data in the GPS and maps of the storm drain infrastructure. Of the eleven flowing sources tracked, no discrete sources were found that would indicate a pollution problem. In many cases, the source of the flowing water was assumed to be groundwater or snow melt.

Test results for 10 of the flowing outfalls did not exceed the water quality thresholds for any of the measured parameters during either the initial screenings or re-test of discharge. One

of the 28 outfalls indicated a low likelihood for illicit discharges (Table 3-2); the implicating factor was temperature in the initial sample. No effluent tested during the 2016 reporting period indicated an increased or high likelihood for illicit discharge from the outfalls involved in the screening.

Table 3-2. Initial and re-test field screening results for outfalls with a low likelihood for illicit connection. Only values exceeding thresholds during either the initial test or re-test, as detailed in Table 2-1, are shown.							
Date of Test	Test Description	Color (color units)	Phenols (mg/l)	Turbidity (NTU)	Temperature (degrees C)	pH	Conductivity mS/cm
Fort Hoyle Road outfall (Outfall OF002520)							
8/31/2016	Initial				24		

3.1.2 Outfalls Requiring Maintenance

Field teams assessed that four outfalls surveyed during the reporting period require maintenance. The maintenance issues requiring attention are listed in Table 3-3. Examples of conditions requiring maintenance included deteriorating and detached components.

Table 3-3. Maintenance problems identified during outfall screening	
Outfall ID	Maintenance Issue
OF001266	Flared components and deck are rusted
OF001271	Deck is rusting
OF001872	Metal deck is completely rusted off
OF001955	Flared portion is completely detached; ground around outfall has eroded; four feet of pipe is exposed and not supported

3.2 COMMERCIAL AND INDUSTRIAL FACILITY INSPECTIONS

Versar field teams conducted inspections of industrial or commercial facilities between December 6, 2016, and February 23, 2017, to identify and qualify potential sources of pollution to the MS4 network. Teams inspected single parcels or clusters of parcels associated with one business (these are also referred to as "parcels," for simplicity) using the HSI guidelines noted above. Field assessments and subsequent data review determined that twelve of the 50 parcels were likely not hotspots, based on conditions observed during the field surveys (Table 3-4). Twenty-two parcels received sufficient marks to qualify as "potential" hotspots (Table 3-5). The remaining 16 parcels exhibited poor conditions in several inspection categories and qualified as

“confirmed” hotspots (Table 3-6). One field team recorded one active pollution problem on a parcel during the reporting period – a dumpster appearing to leak fluid into a nearby storm drain. One of the businesses that were classified as “confirmed” hotspots was reported to the County on January 26, 2017 (Amrein Foods). Another 13 sites were reported on January 30 (Anderson Hardware, Hurley's Golf Carts and Day Bus Company; Auto Auction, Exxon gas station at 1101 Pulaski Highway, Maryland Used Auto Parts, Joppa Detailing and Sherwood Amusements, JC Discount Tire, Gerar Auto Sales and The Master's Auto Shop, Giovanni's Restaurant, Home Depot at 2703 Pulaski Highway, United Rental, First Choice Automotive, and Joppa 7-11 at 602 Pulaski Highway). One site (Diesel and Auto Solutions) was reported to the County on March 13, and the remaining site (Harford Rentals and Scotts Auto Mart) was reported on March 21, 2017.

Tables 3-4 through 3-6 contain the lists of completed facility inspection results and potential pollution sources noted above. An “X” appearing within these tables denotes a potential source of pollution noted within a specific hotspot category (e.g., Vehicle Operations). Appendix E contains maps that show the location of sites inspected for the 2016 reporting period and nearby sites that have been inspected in previous years.

Table 3-4. Inspection results for facilities found to be not a hotspot

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
01000039	2007 Pulaski Highway	Edgewood	Edgewood Veterinary Hospital	12/15/16		X		X		X	Can install rain barrels Dog waste bin is on site
01005928	2702 Pulaski Highway	Edgewood	3-D Storage	12/29/16	X				X		Nice site with two little dry ponds
01019848	1016 Edgewood Road	Edgewood	Car Depot	12/15/16	X			X		X	
01040723	601 Pulaski Highway	Joppa	Sheetz	12/6/16	X	X		X			Parking lot in good condition with some scattered staining
01042424	1401 Pulaski Highway	Edgewood	Woodbridge Center (multiple businesses)	12/6/16		X	X				Suggest notifying owner of dumpster compliance issues Sediment running into storm drain from off-site path
01054805	1018 Edgewood Road	Edgewood	You and I International Market and other businesses	12/20/16			X	X		X	Trash associated with You and I International Market Could benefit from rain barrels
01060325	1014 Edgewood Road	Edgewood	Pawsitively Purrfect Grooming	12/20/16						X	Vehicles that are parked behind the building seem to belong to workers for an adjacent business
01095056	1306 Pulaski Highway	Joppa	Extra Space Self Storage	12/13/16			X	X		X	
01171356	1007 Edgewood Road	Edgewood	Stack & Store Self Storage	12/20/16	X			X			Eighty percent of parcel runs off to pond (new stormwater pond)
01171364	1008 Edgewood Road	Edgewood	Denny Lee's Carpet Outlet	12/20/16			X	X		X	Could use rain barrels
01252321	1101 Business Center Way	Edgewood	Thompson Toyota	12/6/16	X						
01279610	1307 Business Center Way	Edgewood	Thompson Toyota	12/6/16	X			X			

Table 3-5. Inspection results for facilities found to be a potential hotspot

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infrastructure	Notes
01000012	2106 Pulaski Highway	Edgewood	Verizon	12/20/16			X	X		X	Need to clean trash better
01006312	1812 Pulaski Highway	Edgewood	Jiffy Lube, L&L Taxi; Victory Cab	12/20/2016; 2/23/17	X	X	X	X			Remove abandoned vehicles from the parking lot Check storm conveyance infrastructure data for another inlet (only one was seen) There should be room to remove some impervious cover in the rear of the lot and install a small BMP
01017926	320 Pulaski Highway	Joppa	Joel's Auto Repair; C&S Hydraulic and Welding Services	12/13/16	X	X	X	X			Construction materials throughout parcel Various dumpsters stored Dry pond behind building
01026909	1855 Pulaski Highway	Edgewood	Shell gas station	12/15/16	X			X	X		Roof over fuel islands is teetering in gusty wind Additional or wider trench drains would be better, considering the steep slope to the road Thirty to forty apparent weep holes mostly drain to parking lot from perimeter
01031562	1841, 1851, and 1901 Pulaski Highway	Edgewood	Harbor Freight Tools and other businesses (Edgewater Village)	12/15/2016; 2/23/17		X	X	X		X	Lots of area on south side of parcel for retrofit of pervious restoration Firestone business is closed; dry cleaners not on-site now Dumpsters could be re-positioned away from downspout flows There is a possible opportunity for a stormwater collection area in the rear of the property

Table 3-5. (Continued)											
Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
01039652	1010 Edgewood Road	Edgewood	Sun Cleaners and other businesses (Village Shopping Center)	12/20/2016; 2/23/17	X	X	X	X		X	Debris behind building cannot be attributed to one business Clean up excessive trash near pools company, and in woods by stream area, and in rear of property The lot may have a good area to put a BMP in the southeast corner where there is an ephemeral channel
01043056	1020 Gateway Drive	Edgewood	7-Eleven store (Gateway)	12/6/16	X	X		X	X	X	Suggest adding rain barrels at fuel islands or upgrading drains to control flow of oils and fuels to storm drains, as noted in 2008 inspection Dumpsters seemed okay relative to 2008 assessment
01045180	1712 Pulaski Highway	Edgewood	BP gas station	1/12/17	X	X	X	X		X	Inlet grate (front entranceway) is badly damaged; could put in sand filter during replacement or repair U-Haul vehicles are parked over handicapped spot
01045849	2200 Pulaski Highway	Edgewood	Burger King	12/6/16			X	X	X	X	Get rid of filthy old deep fryer Off-site trash is immediately behind the property fence
01046667	901 Pulaski Highway	Joppa	360 Custom Detail Shop [Closed]	12/13/16	X	X		X		X	Business is closed Lot is being used to store vehicles Runoff from the paved areas goes off the lot into a wooded area
01057197	700 Pulaski Highway	Joppa	National Budget Muffler; Joppa Car and Truck World	12/13/16	X	X	X	X		X	Field crews did not access the rear lot due to fencing and "private property" signs Observed numerous car parts and materials in rear lot

Table 3-5. (Continued)

Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
01061518	2201 Pulaski Highway	Edgewood	McDonald's; BP gas station	12/20/16	X	X	X	X	X	X	Should dispose of old deep fryers Parking lot seems to flow off-site to the southeast
01061879	2809 Pulaski Highway	Edgewood	McQuire Enterprises and other businesses	12/29/16	X	X		X	X	X	There may be a stream behind the property Recent tree clearing could indicate additional construction on site in future There is room for retrofit on the south edge, which is relatively steeply downhill
01075004	3615 B and O Road	Abingdon	Singer Auto Center and Tire Center	1/12/17	X	X	X	X			Clean up old steel barrels from woods Suds near outfall (may be good to test headcut and outfall for contaminants) Add secondary containment around oil tank
01076809	2715 Pulaski Highway	Edgewood	Western Auto	12/29/16	X	X		X		X	Northeast edge and behind property are very wet and have wetland vegetation and could be restored
01103075	3212 Pulaski Highway	Edgewood	Otter Point Automotive	12/29/16	X	X	X	X		X	Lots of oil drums, most were empty, but at least one was half full Huge fuel oil tank read one-quarter full but looked derelict and should be removed
01103083	3302 Pulaski Highway	Edgewood	Aleks Motors, LLC (active business)	12/29/16	X	X		X		X	Talked to owner and he mentioned that he stores used oil to "sell a large amount" Some of the containers can be disposed of or recycled Scrap auto parts should be removed
01105264	3901 Pulaski Highway	Abingdon	7- Eleven Store (Pulaski Highway)	1/12/17	X	X	X				Get rid of mattress and furniture near dumpsters Clean up trash (parking lot and pond) Check for oil/water separator in pond (data)

Table 3-5. (Continued)											
Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
01126296	1002; 1060 Joppa Farm Road	Joppa	Joppa Market Place (multiple businesses)	12/6/2016; 2/23/17	X	X	X	X		X	Existing roadside ditch along Pulaski Highway could be enhanced for better infiltration (may be SHA property) There is room for a small BMP along Joppa Farm Road
01246747	1009 Edgewood Road	Edgewood	Waters Auto Services	12/20/16	X		X	X		X	It looks like much of the runoff flows east toward the Stack & Store parking lot (which flows northeast to the new stormwater pond)
01299018	604 Pulaski Highway	Joppa	Joppa Transmission	12/13/16	X		X	X			Some auto servicing done outdoors Staining near storm drain
01373714	503 Pulaski Highway	Joppa	Spartan Equipment	12/13/16		X	X	X			Recommend labeling liquid and gas containers

Table 3-6. Inspection results for facilities found to be a confirmed hotspot											
Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infrastructure	Notes
01001876	900 Pulaski Highway	Joppa	Anderson Hardware	12/13/16	X	X	X	X		X	Drums on their sides Rusting and unlabeled containers Lots of trash A shooting target is on the site
01012320	2704 and 2706 Pulaski Highway	Edgewood	Harford Rentals and Scotts Auto Mart	12/29/2016	X	X		X		X	Clean up and dispose of pile of gasoline cans, old fuel oil tank, and car batteries There was a strong smell of oil or diesel fuel in one area
01013122	706 Pulaski Highway	Joppa	Diesel and Auto Solutions	12/13/16; 2/23/17	X	X	X	X		X	Lot needs repaving Needs more garbage bins Suggest testing discharge associated with lot since there was active waste liquid dumping and vehicle washing on this and the adjacent (east) lot
01018329; 01028367 (combined)	1114 Old Mountain Road South	Joppa	Hurley's Golf Carts and Day Bus Company; Auto Auction of Baltimore	12/13/16	X	X	X	X			Poor condition of golf cart building Non-sanitary storage truck (sewage only)
01026437	1101 Pulaski Highway	Joppa	Exxon gas station	12/13/16	X	X	X	X		X	Storm drains and runoff lead directly into storm drain (curb and grate inlet) Suggest seeing if there is runoff or gasoline products, or both, during a rain event
01036637	1009 Pulaski Highway	Joppa	Maryland Used Auto Parts	12/13/16	X	X	X	X		X	Recent SWPPP permit filed with the County Some oil and liquid drums need secondary containment There are approximately 200 vehicles stored on the lot
01038656	514 Pulaski Highway	Joppa	Joppa Detailing, Window Tinting, and Signs; Sherwood Amusements	1/12/17	X	X	X		X	X	Lots of dirty equipment all over the lot

Table 3-6. (Continued)											
Parcel ID	Address	Town	Business Name	Inspected	Vehicle Operations	Outdoor Materials	Waste Management	Physical Plant	Turf/ Landscaping	Stormwater Infra-structure	Notes
01038753	2102 Pulaski Highway	Edgewood	JC Discount Tire	12/6/16	X	X	X	X		X	Previously operating gas station (Mystik) was inactive; old filling stations stored in rear lot; should probably dispose of old barrels of liquids; could possibly recycle old car parts; discarded tires should be disposed of properly
01060317	2002 and 2000 Pulaski Highway	Edgewood	Gerar Auto Sales; The Master's Auto Shop and Detailing	12/20/16	X	X		X		X	Confirm whether large oil tank is empty or can be removed
01081748	2101 Pulaski Highway	Edgewood	Giovanni's Restaurant	12/15/16	X	X	X	X		X	Parking lot is damaged around the inlet; the owner could retrofit during repair
01088483	2703 Pulaski Highway	Edgewood	Home Depot	12/29/16	X	X	X	X		X	Pond water appears slightly discolored There is some trash in the vicinity of the pond Storm runoff is ponding on the parking lot entrance road in two areas
01148958	704 Pulaski Highway	Joppa	Amrein Foods	12/13/16	X	X	X	X		X	Leaking dumpster near storm drain Visible staining and wet discharge evident during site visit
01159046	497 Pulaski Highway	Joppa	United Rental	12/6/16	X	X	X	X		X	There are lots of spill kits around the property and barriers to protect outside liquid storage
01236164	710 Pulaski Highway	Edgewood	First Choice Automotive	12/13/16	X	X	X	X			Multiple businesses Garbage cans, and liquid storage containers Stains throughout active work site
01298992	602 Pulaski Highway	Joppa	Joppa Amoco and 7-11 gas station and convenience store	12/13/16	X	X	X	X		X	Trash within drains Unidentified dry pond behind lot may receive runoff

4.0 CONCLUSIONS

During the 2016 reporting year, Harford County staff investigated 233 outfall locations to comply with the Illicit Discharge Monitoring Program and meet NPDES permit requirements. Staff from Harford County's consultant, Versar, inspected the 28 outfalls that had dry weather flows, and tested any observed effluent for water quality indicators. Successful screening of the 28 selected outfalls during the field investigations yielded only one outfall with a low likelihood for illicit connection based on the dry weather screening protocols. Field teams did not identify any outfalls with a moderate or high likelihood of illicit discharge, and source tracking did not identify a potential pollution source for any of the outfalls. Inspectors identified maintenance needs at four of the 28 outfalls.

Versar staff conducted hotspot investigations at 50 commercial and industrial facilities along the Route 40 (Pulaski Highway) corridor including the areas of Joppa and Edgewood. The field teams identified 16 confirmed hotspots during the reporting period.

5.0 REFERENCES

- Baltimore County. 2007. National Pollutant Discharge Elimination System (NPDES) Annual Report. Section 5 - Illicit Connections Program. Baltimore County, Maryland.
- Brown, E., D. Caraco, and R. Pitt. 2004. Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments. Center for Watershed Protection, Ellicott City, MD. October.
- Versar, Inc. 2010. Harford County Illicit Discharge Monitoring Program: Site Selection, Screening, and Quality Assurance Protocols. Prepared by Versar, Inc. for Harford County Department of Public Works, Division of Highways and Water Resources, Bel Air, MD. November.
- Wright, T., C. Swann, K. Cappiella, and T. Schueler. 2005. Unified Subwatershed and Site Reconnaissance: A User's Manual, Version 2.0. Center for Watershed Protection, Ellicott City, MD. February.

APPENDIX A
OUTFALLS SCREENED BY
VERSAR DURING 2016–2017

Table A-1. Harford County reported flowing outfalls screened by Versar staff during the 2016 reporting period

Outfall ID	Initial Inspection Date	Coordinates		Outfall ID	Initial Inspection Date	Coordinates	
		(NAD83 State Plane feet)				(NAD83 State Plane feet)	
		Northing	Easting			Northing	Easting
OF000038*	9/6/16	691845.754	1491457.925	OF001672*	9/8/16	675523.769	1493846.395
OF000074	9/6/16	681823.898	1486041.931	OF001738	9/14/16	681610.945	1510916.525
OF000111*	9/14/16	681770.256	1510671.188	OF001872	9/9/16	666554.837	1505199.037
OF000119	8/31/16	664193.716	1486577.185	OF001914	9/14/16	666546.468	1501306.137
OF000125*	9/14/16	670120.142	1504485.691	OF001955	9/8/16	667056.844	1497397.780
OF000141	9/9/16	662626.175	1509274.722	OF001974	9/13/16	660559.627	1509519.368
OF000150	9/9/16	661132.974	1510393.597	OF001975	9/13/16	660538.915	1509535.075
OF000307	9/8/16	673108.878	1505910.374	OF001982	9/13/16	660709.303	1509745.375
OF000585*	8/31/16	640177.613	1489900.124	OF002295	11/8/16	658923.534	1512669.552
OF000647	9/8/16	666819.276	1498565.256	OF002520	8/31/16	632663.273	1502631.380
OF000691*	9/8/16	671665.077	1506349.790	OF002560	8/31/16	665084.365	1486885.256
OF001266	9/6/16	690980.927	1504377.820	OF002958	8/31/16	688184.242	1484136.973
OF001271*	9/6/16	690187.423	1505022.676	OF003302	8/31/16	687028.065	1482093.748
OF001278*	9/14/16	686716.101	1502034.206	OF003334	9/14/16	684994.414	1506763.912
* Outfall was flowing for Harford County screening and not flowing for Versar's initial screening							

APPENDIX B
DATA SHEETS
FOR DRY WEATHER SCREENING

ILLCIT DISCHARGE INSPECTION FORM
HARFORD COUNTY, MARYLAND
(PAGE 1 OF 2)

Outfall ID:		Watershed Name:	
Initial Assessment			
Date:		Time:	
Inspectors:		Date of Last Rain:	
Air Temperature (°C):		Rainfall Amount (in.):	
Is flow observed?		(if present, complete page 2 and a follow-up assessment)	
Yes		No	
Outfall Description			
Type:		Height:	
Shape:		Width:	
Material:		Additional components (circle applicable):	
		end wall wing walls flared end concrete deck pipes manhole	
Outfall Location			
GPS northing:		General land use (circle one):	
GPS easting:		Rural Residential Urban	
GPS unit:		11 - Low Density 12 - Medium Density	
Photo ID's:		13 - High Density 14 - Commercial	
		15 - Industrial 16 - Institutional	
		18 - Urban Open Space	
		Nearby address / intersection / utility pole:	
Structural Conditions			
(circle one)			
None		Moderate	
		Severe	
Recommend referral for repair:			
Yes		No	
Other comments:			
Other Outfall Conditions			
(circle one)			
None		Moderate	
		Severe	
Erosion at outfall:			
Outfall submergence (in):			
Other comments:			
Vegetative Condition Below Outfall			
(circle one)			
Normal growth (natural environment)		Excessive growth	
		Inhibited growth	
Other comments:			
Deposits / Stains / Algal Growth			
(circle applicable)			
None		Oily	
Sediment		Other (describe below)	
		Excessive algal growth	
		Excessive bacterial growth	
Other comments:			
Field Notes / Visual Observances			

ILLICIT DISCHARGE INSPECTION FORM
HARFORD COUNTY, MARYLAND
(PAGE 2 OF 2)

Outfall ID:		Watershed Name:	
Initial Assessment		Follow-up Assessment (typically within 24 hours)	
<i>(Same as information from Page 1 of 2)</i>		<i>(Do not complete if no flow is observed)</i>	
Date:		Date:	
Time:		Time:	
Inspectors:		Inspectors:	
Date of Last Rain:		Date of Last Rain:	
Rainfall Amount (in.):		Rainfall Amount (in.):	
Air Temperature (°C):		Air Temperature (°C):	
Dry-Weather Flow Information			
Estimated Flow rate: Trickle Moderate Substantial			
Measurable Flow rate (cfs or liters/min): <i>(Q = area X velocity in ft per second)</i>		Measurable Flow rate (cfs): <i>(Q = area X velocity in ft per second)</i>	
Flow depth (inches):		Flow depth (inches):	
Water Quality - Visual and Smell Indicators			
Water color:	clear brown gray green yellow red	Water color:	clear brown gray green yellow red
Other:		Other:	
Clarity / turbidity:	clear cloudy opaque	Clarity / turbidity:	clear cloudy opaque
Other:		Other:	
Floatables:	none oil sheen trash toilet paper fecal matter	Floatables:	none oil sheen trash toilet paper fecal matter
Other debris:		Other debris:	
Detergents / surfactants:	none suds/bubbles	Detergents / surfactants:	none suds/bubbles
Color:		Color:	
Odor:	none sewage chlorine oil/gas rancid-sour sulfur/rotten eggs	Odor:	none sewage chlorine oil/gas rancid-sour sulfur/rotten eggs
Other:		Other:	
Field Measurements			
Parameter (Units / Detection Limit)	Measured Value:	Parameter (Units / Detection Limit)	Measured Value:
<i>(Lamotte meter)</i>		<i>(Lamotte meter)</i>	
Turbidity (0-400 FTU / 0):		Turbidity (0-400 FTU / 0):	
Color (0-1000 color units / 0):		Color (0-1000 color units / 0):	
Phenols (0.00-6.00 ppm / 0):		Phenols (0.00-6.00 ppm / 0):	
Copper (0-6.00 ppm / 0):		Copper (0-6.00 ppm / 0):	
Detergents/surfactants (0.5-8.0 ppm / 0.5):		Detergents/surfactants (0.5-8.0 ppm / 0.5):	
Residual chlorine (0.00-4.00 ppm / 0):		Residual chlorine (0.00-4.00 ppm / 0):	
<i>(Oakton meter)</i>		<i>(Oakton meter)</i>	
DO (0.01-15.0 mg/L / 0.01):		DO (0.01-15.0 mg/L / 0.01):	
Temperature, H ₂ O (0-50° Celsius / 0.1):		Temperature, H ₂ O (0-50° Celsius / 0.1):	
pH (0.01-15.00 pH units / 0.01):		pH (0.01-15.00 pH units / 0.01):	
<i>(YSI meter)</i>		<i>(YSI meter)</i>	
Conductivity (uS/cm/10 ⁶):		Conductivity (uS/cm/10 ⁶):	
Additional Field Notes / Visual Observances			

HARFORD COUNTY, MD – DRY WEATHER DISCHARGE TRACK DOWN

Subwatershed:	Outfall ID:
Date (MM/DD/YY): ____ / ____ / 20 ____	Track Down Method: <input type="checkbox"/> Move up trunk <input type="checkbox"/> Split trunk
Investigators:	<i>New Branch Series, Starting with Junction:</i>
ADC Map Page/Grid: ____ / ____	Structure ID:
	Structure Type: ____

Structure ID	Structure Type M - Manhole CI - Curb Inlet YD- Yard Drain Other: _____	Time Visited	Flow (Y/N)	Analyte:		Comments (If junction, fill out new sheet for each branch of network)
				Concentration (Units: _____)	Concentration (Units: _____)	
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						

Stormdrain Network: Plan View Diagram (for Split Trunk or New Branch Series)

Suspected Outfall Source:	<input type="checkbox"/> Trace Lost <input type="checkbox"/> Unknown Parcel ID Number: _____
Suspected Source Type:	<input type="checkbox"/> Tap Water <input type="checkbox"/> Sewage <input type="checkbox"/> Wash Water <input type="checkbox"/> Industrial <input type="checkbox"/> Unknown
Comment on Suspected Source:	

APPENDIX C
DATA SHEETS
FOR FACILITY INSPECTIONS

Hotspot Site Investigation

HSI

WATERSHED:		SUBWATERSHED:		UNIQUE SITE ID:	
DATE: ____/____/____		ASSESSED BY:		CAMERA ID:	
MAP GRID:		LAT ____° ____' ____" LONG ____° ____' ____"		LMK #	
A. SITE DATA AND BASIC CLASSIFICATION					
Name and Address: _____		Category: <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Miscellaneous		INDEX*	
_____		<input type="checkbox"/> Institutional <input type="checkbox"/> Municipal <input type="checkbox"/> Golf Course			
_____		<input type="checkbox"/> Transport-Related <input type="checkbox"/> Marina <input type="checkbox"/> Animal Facility			
SIC code (if available): _____		Basic Description of Operation: _____			
NPDES Status: <input type="checkbox"/> Regulated <input type="checkbox"/> Unregulated <input type="checkbox"/> Unknown					
B. VEHICLE OPERATIONS <input type="checkbox"/> N/A (Skip to part C)				Observed Pollution Source? <input type="checkbox"/>	
B1. Types of vehicles: <input type="checkbox"/> Fleet vehicles <input type="checkbox"/> School buses <input type="checkbox"/> Other: _____					
B2. Approximate number of vehicles: _____					
B3. Vehicle activities (circle all that apply): Maintained <input type="checkbox"/> Repaired <input type="checkbox"/> Recycled <input type="checkbox"/> Fueled <input type="checkbox"/> Washed <input type="checkbox"/> Stored <input type="checkbox"/>					
B4. Are vehicles stored and/or repaired outside? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
Are these vehicles lacking runoff diversion methods? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
B5. Is there evidence of spills/leakage from vehicles? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
B6. Are uncovered outdoor fueling areas present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
B7. Are fueling areas directly connected to storm drains? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
B8. Are vehicles washed outdoors? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
Does the area where vehicles are washed discharge to the storm drain? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C. OUTDOOR MATERIALS <input type="checkbox"/> N/A (Skip to part D)				Observed Pollution Source? <input type="checkbox"/>	
C1. Are loading/unloading operations present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
If yes, are they uncovered and draining towards a storm drain inlet? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C2. Are materials stored outside? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell If yes, are they <input type="checkbox"/> Liquid <input type="checkbox"/> Solid Description: _____					
Where are they stored? <input type="checkbox"/> grass/dirt area <input type="checkbox"/> concrete/asphalt <input type="checkbox"/> bermed area					
C3. Is the storage area directly or indirectly connected to storm drain (circle one)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C4. Is staining or discoloration around the area visible? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C5. Does outdoor storage area lack a cover? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C6. Are liquid materials stored without secondary containment? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
C7. Are storage containers missing labels or in poor condition (rusting)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
D. WASTE MANAGEMENT <input type="checkbox"/> N/A (Skip to part E)				Observed Pollution Source? <input type="checkbox"/>	
D1. Type of waste (check all that apply): <input type="checkbox"/> Garbage <input type="checkbox"/> Construction materials <input type="checkbox"/> Hazardous materials					
D2. Dumpster condition (check all that apply): <input type="checkbox"/> No cover/Lid is open <input type="checkbox"/> Damaged/poor condition <input type="checkbox"/> Leaking or evidence of leakage (stains on ground) <input type="checkbox"/> Overflowing					
D3. Is the dumpster located near a storm drain inlet? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
If yes, are runoff diversion methods (berms, curbs) lacking? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell					
E. PHYSICAL PLANT <input type="checkbox"/> N/A (Skip to part F)				Observed Pollution Source? <input type="checkbox"/>	
E1. Building: Approximate age: _____ yrs. Condition of surfaces: <input type="checkbox"/> Clean <input type="checkbox"/> Stained <input type="checkbox"/> Dirty <input type="checkbox"/> Damaged					
Evidence that maintenance results in discharge to storm drains (staining/discoloration)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know					

*Index: ○ denotes potential pollution source; ☐ denotes confirmed polluter (evidence was seen)

Hotspot Site Investigation

HSI

E2. Parking Lot: Approximate age ____ yrs. Condition: <input type="checkbox"/> Clean <input type="checkbox"/> Stained <input type="checkbox"/> Dirty <input type="checkbox"/> Breaking up Surface material <input type="checkbox"/> Paved/Concrete <input type="checkbox"/> Gravel <input type="checkbox"/> Permeable <input type="checkbox"/> Don't know		<input type="radio"/>
E3. Do downspouts discharge to impervious surface? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know <input type="checkbox"/> None visible Are downspouts directly connected to storm drains? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Don't know		<input type="radio"/>
E4. Evidence of poor cleaning practices for construction activities (stains leading to storm drain)? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		<input type="radio"/>
F. TURF/LANDSCAPING AREAS <input type="checkbox"/> N/A (skip to part G)		Observed Pollution Source? <input type="text"/>
F1. % of site with: Forest canopy ____% Turf grass ____% Landscaping ____% Bare Soil ____%		<input type="radio"/>
F2. Rate the turf management status: <input type="checkbox"/> High <input type="checkbox"/> Medium <input type="checkbox"/> Low		<input type="radio"/>
F3. Evidence of permanent irrigation or "non-target" irrigation <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		<input type="radio"/>
F4. Do landscaped areas drain to the storm drain system? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		<input type="radio"/>
F5. Do landscape plants accumulate organic matter (leaves, grass clippings) on adjacent impervious surface? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Can't Tell		<input type="radio"/>
G. STORM WATER INFRASTRUCTURE <input type="checkbox"/> N/A (skip to part H)		Observed Pollution Source? <input type="text"/>
G1. Are storm water treatment practices present? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown If yes, please describe: _____		<input type="radio"/>
G2. Are private storm drains located at the facility? <input type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> Unknown Is trash present in gutters leading to storm drains? If so, complete the index below.		<input type="radio"/>
Index Rating for Accumulation in Gutters		
	Clean	Filthy
Sediment	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
Organic material	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
Litter	<input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5	
G3. Catch basin inspection – Record SSD Unique Site ID here: _____ Condition: <input type="checkbox"/> Dirty <input type="checkbox"/> Clean		
H. INITIAL HOTSPOT STATUS - INDEX RESULTS		
<input type="checkbox"/> Not a hotspot (fewer than 5 circles and no boxes checked) <input type="checkbox"/> Potential hotspot (5 to 10 circles but no boxes checked)		
<input type="checkbox"/> Confirmed hotspot (10 to 15 circles and/or 1 box checked) <input type="checkbox"/> Severe hotspot (>15 circles and/or 2 or more boxes checked)		
Follow-up Action:		
<input type="checkbox"/> Refer for immediate enforcement		
<input type="checkbox"/> Suggest follow-up on-site inspection		
<input type="checkbox"/> Test for illicit discharge		
<input type="checkbox"/> Include in future education effort		
<input type="checkbox"/> Check to see if hotspot is an NPDES non-filer		
<input type="checkbox"/> Onsite non-residential retrofit		
<input type="checkbox"/> Pervious area restoration; complete PAA sheet and record Unique Site ID here: _____		
<input type="checkbox"/> Schedule a review of storm water pollution prevention plan		
Notes:		

APPENDIX D
MAPS OF OUTFALLS SCREENED BY VERSAR
DURING 2016–2017

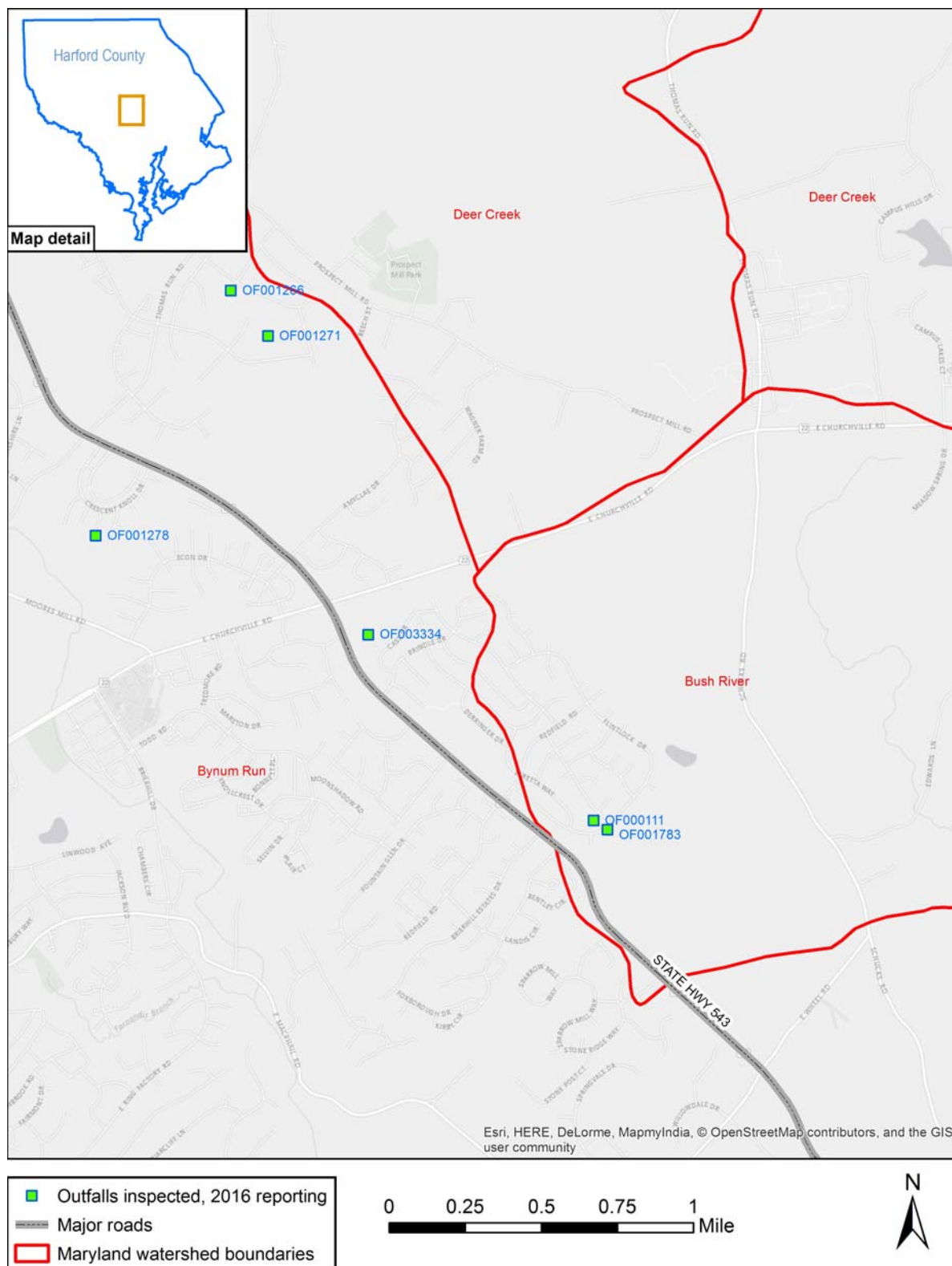


Figure D-1. Map of outfalls visited and screened in the Bel Air-Churchville area, 2016

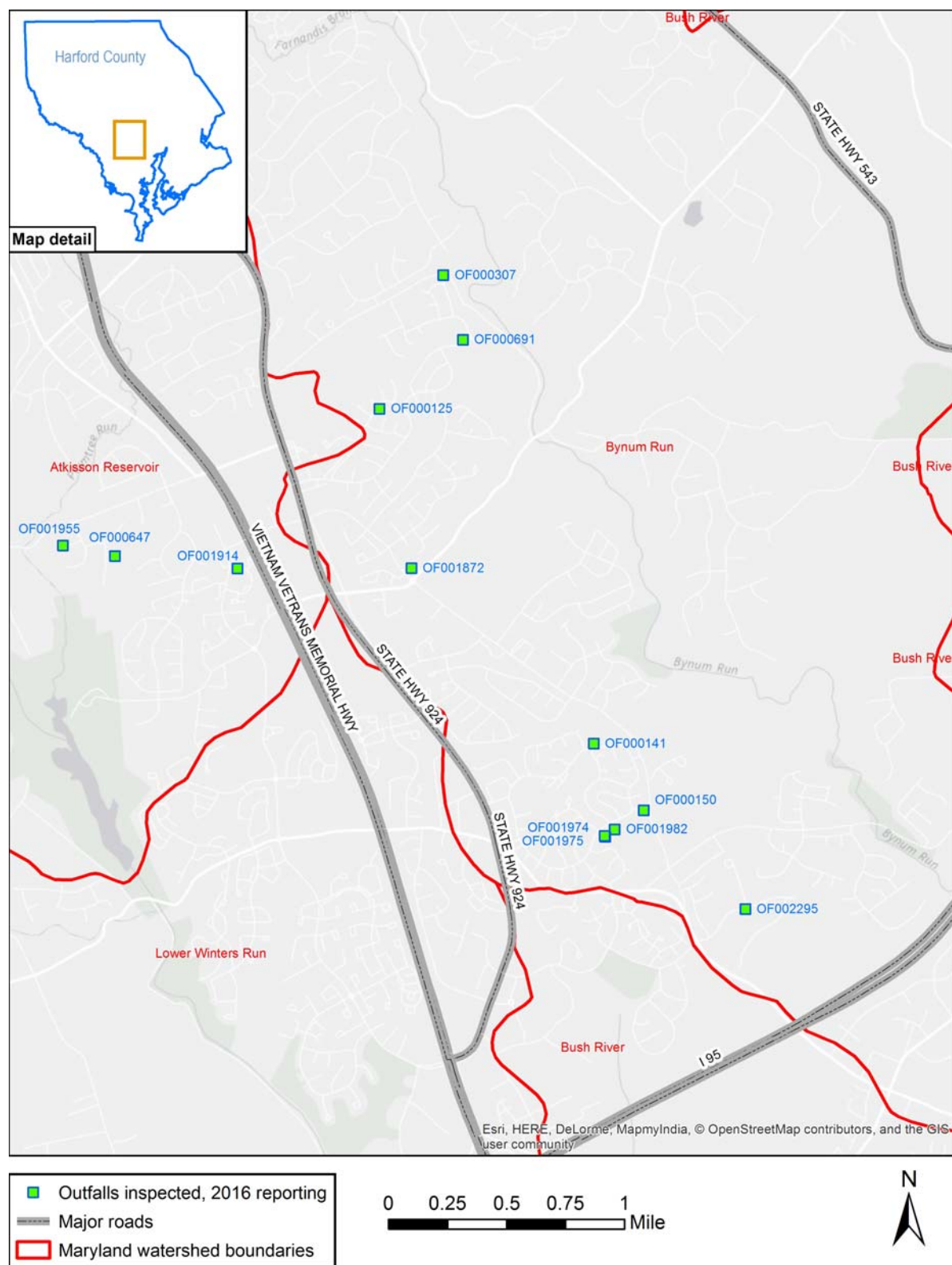


Figure D-2. Map of outfalls visited and screened in the Bel Air East area, 2016

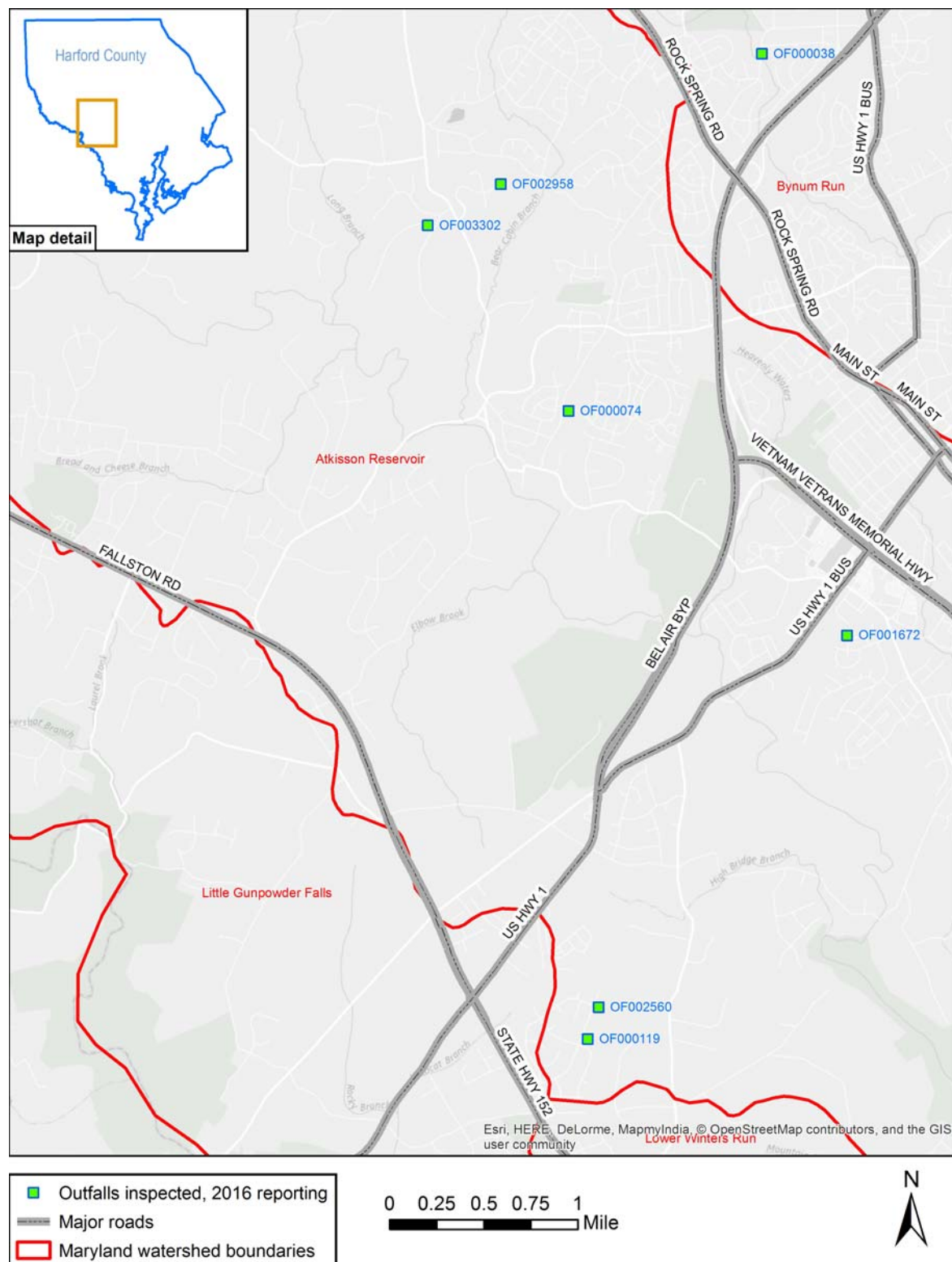


Figure D-3. Map of outfalls visited and screened in the Bel Air West area, 2016

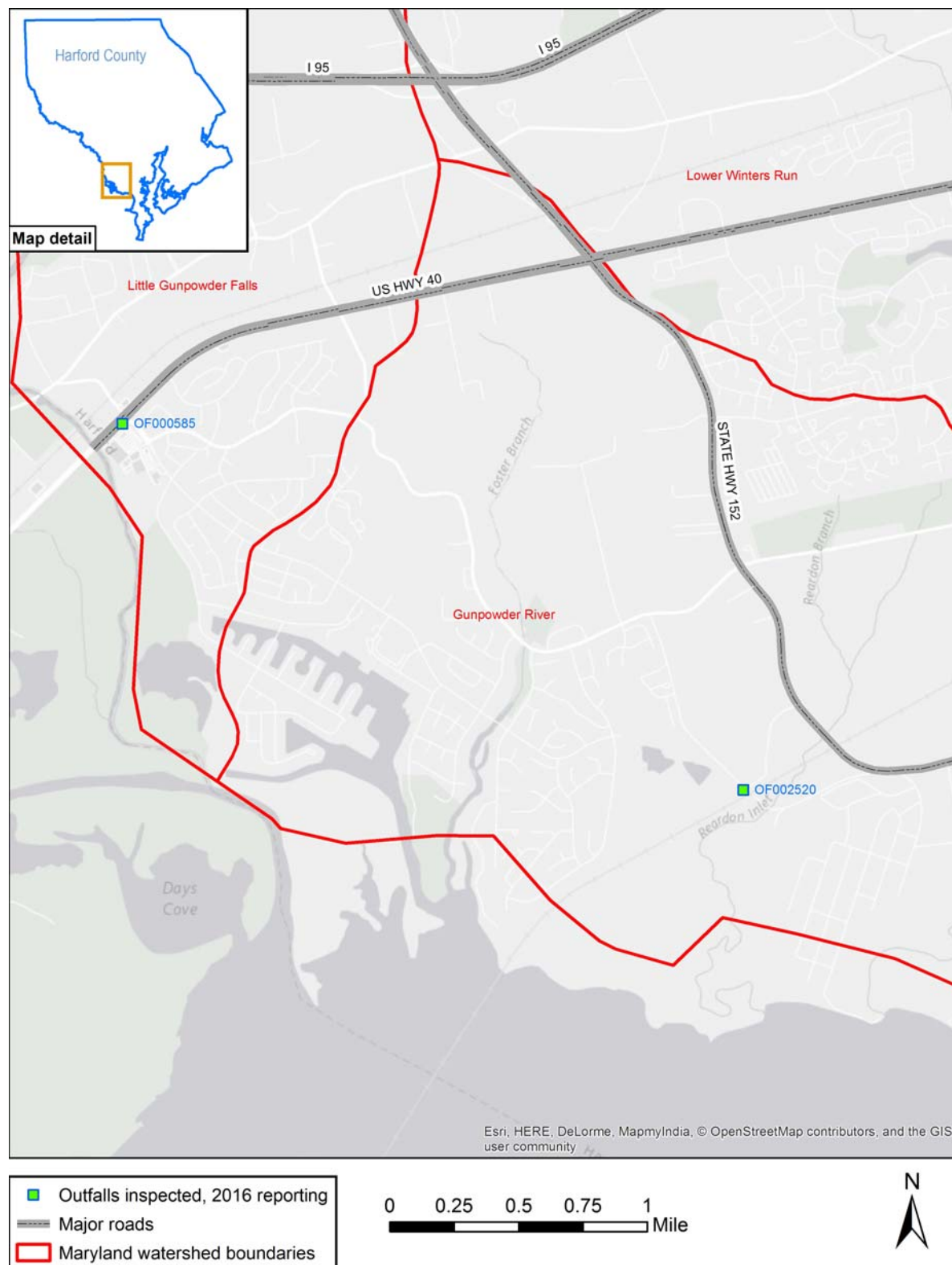


Figure D-4. Map of outfalls visited and screened in the Joppa area, 2016

APPENDIX E
MAPS OF FACILITIES INSPECTED
DURING 2016–2017

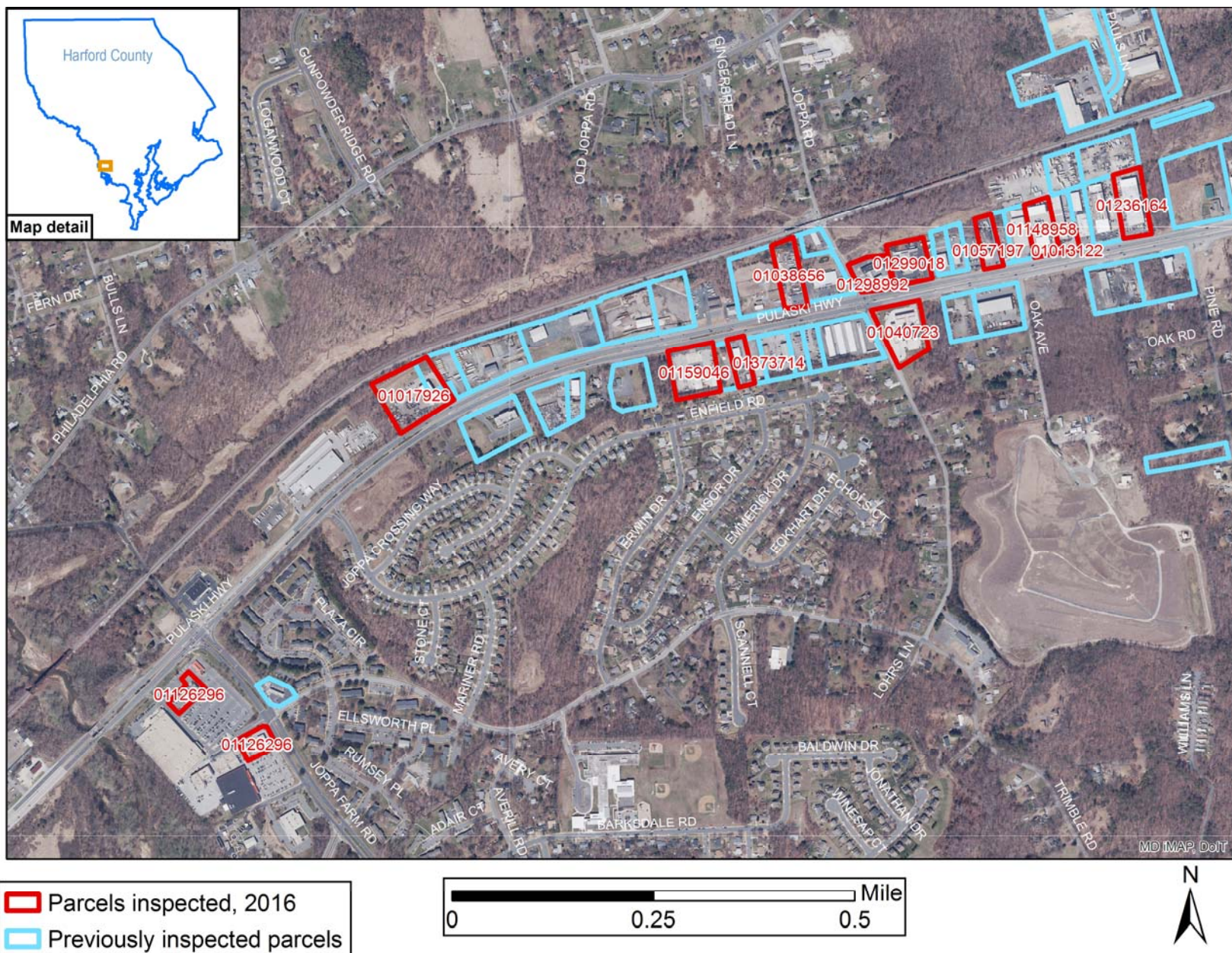


Figure E-1. Sites inspected in the Joppa-West area for the 2016 reporting year

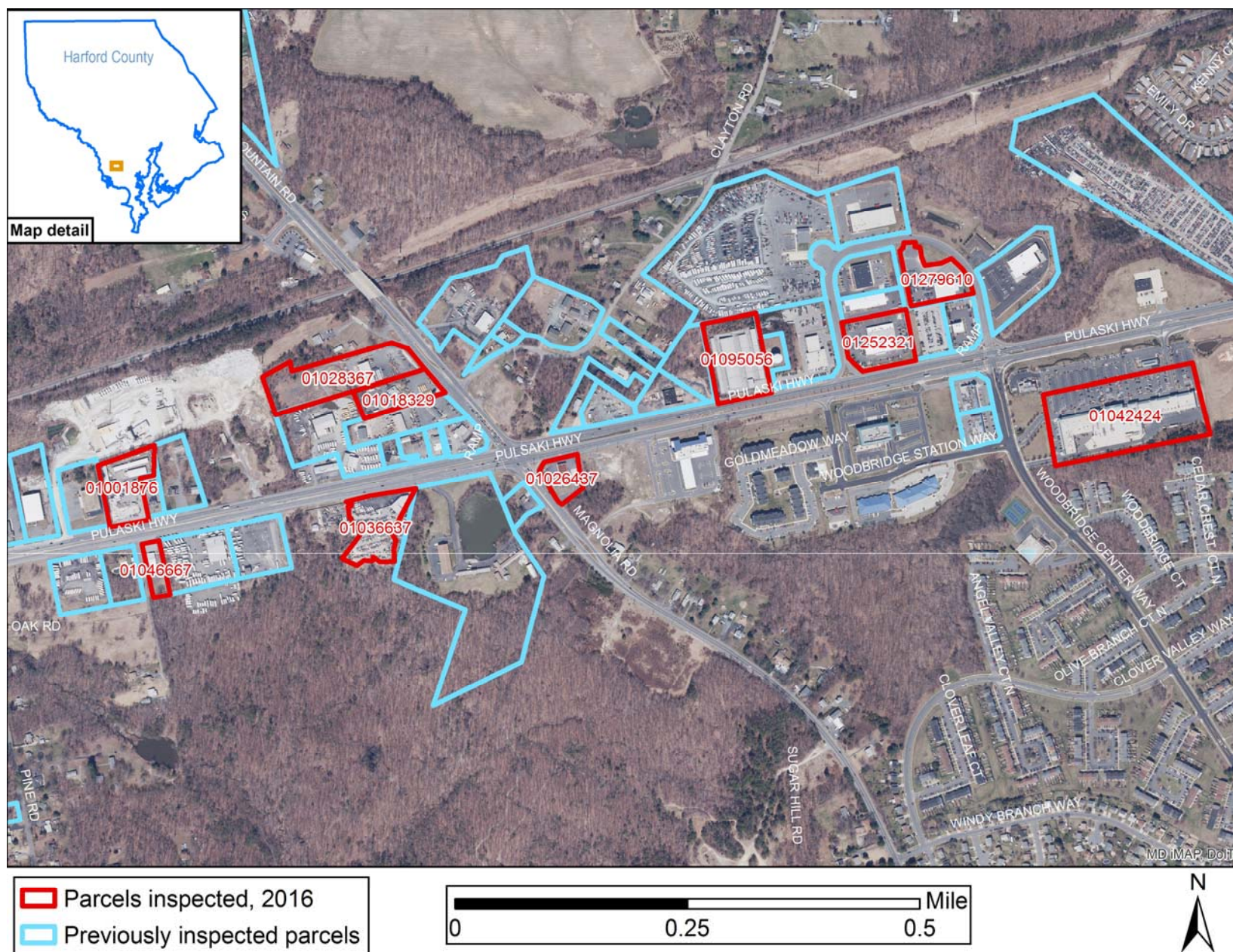


Figure E-2. Sites inspected in the East Joppa area for the 2016 reporting year

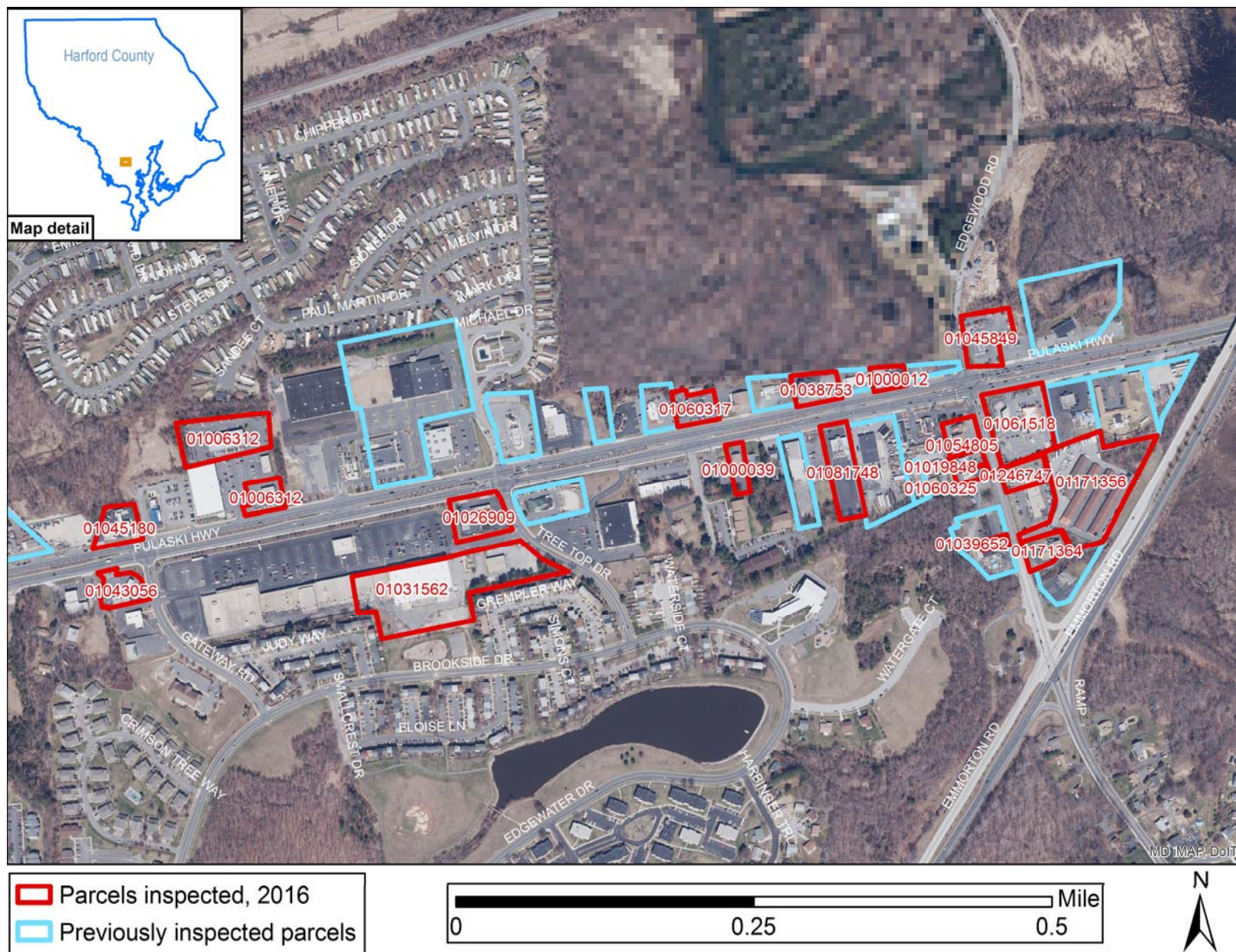


Figure E-3. Sites inspected in the West Edgewood area for the 2016 reporting year

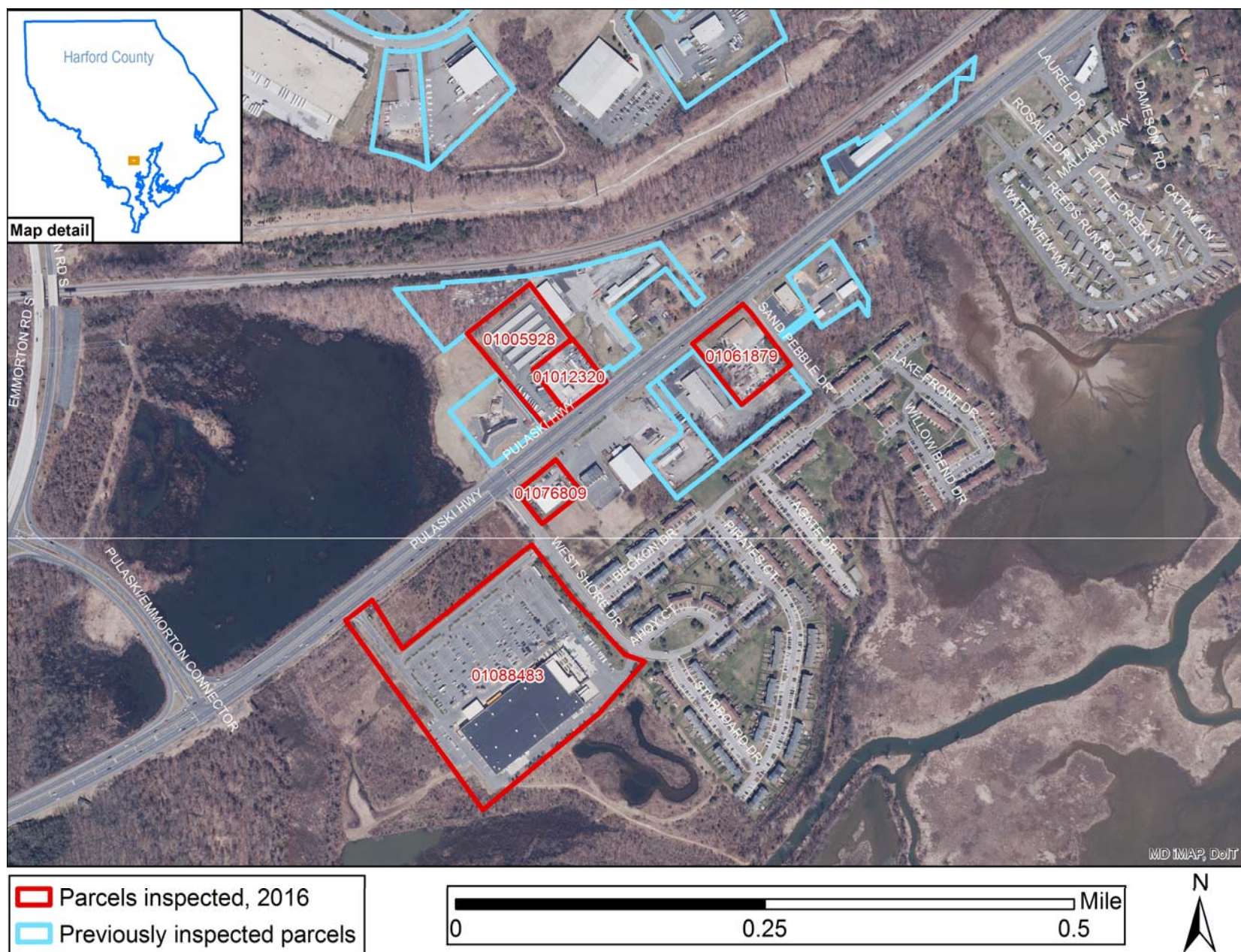


Figure E-4. Sites inspected in the East Edgewood area for the 2016 reporting year



Figure E-5. Sites inspected in the Otter Point area for the 2016 reporting year

Annual Hazmat Response Record

Hazmat #	Incident #	Response Code	Date	Location	Box	Fire Company	Description	Billable	NOV	Fine	Hours on Scene	Watershed	Reached Waterway
16-109	16-160670	I	4-Jul-16	Rt 924 / Bel Air Bypass	351	03	Investigate abandon tank at the intersection	N	N		2.5	Bynum Run	N
16-110	16-161170	C	5-Jul-16	128 Breakwater Court	808	08	Gasoline leak from boat into the Gunpowder River	N	N		2.5	Gunpowder River	Y
16-111	16-163880	C	7-Jul-16	2134 Harkins Road	1004	10	Diesel fuel spill from an EMS unit at the firehouse	N	N		2.5	Deer Creek	N
16-112	16-164639	C	8-Jul-16	JFK SB MM 730	895S	08	Assist FD with a pump off at scene of a MVA	N	N		2.5	Little Gunpowder Falls	N
16-113	16-164648	I	8-Jul-16	JFK SB MM 741	495-77	04	Assist FD at scene of a MBA	N	N		1	Little Gunpowder Falls	N
16-114	16-164796	C	8-Jul-16	1254 Allison Court	402	04	Investigate unknown substance off-gassing on the porch	N	N		2.5	Bynum Run	N
16-115	16-169179	C	13-Jul-16	315 Mountain Road	1361	13	Fuel spill at the scene of a MVA	N	N		4	Little Gunpowder Falls	N
16-116	16-169850	C	14-Jul-16	4 N. Main Street	305	03	Follow up	N	N		2.5	Bynum Run	N
16-117	16-169970	I	14-Jul-16	1334 North Bend Road	730	07	Assist HCSO with a tractor trailer that ran off roadway, no spill	N	N		2	Deer Creek	N
16-118	16-170048	N	14-Jul-16	1522 Meadowcrest Court	206	02	Alerted for spill, cancelled by FD, no spills at location	N	N		0	James Run	N
16-119	16-170502	N	14-Jul-16	810 Foxwell Road	808	08	Notification of transformer oil spill from BGE	N	N		0	Little Gunpowder Falls	N
16-120	16-170806	I	15-Jul-16	3530 Old Level Road	102	01	Assist FD at scene of a barn fire	N	N		0	Deer Creek	N
16-121	16-170965	C	15-Jul-16	4 N. Main Street	305	03	Investigate chemical odor in a building, floor stripper from next door	N	N		3	Bynum Run	N
16-122	16-175238	I	15-Jul-16	Philadelphia Road / Brass Mill Road	420	04	Assist FD at scene of MVA with rescue	N	N		0	James Run	N
16-123	16-175537	C	20-Jul-16	2300 Level Road	555	05	Pump off from over-turned dump truck	N	N		5	Lower Susquehanna River	N
16-124	16-176727	C	22-Jul-16	1942 Castle Road	316	03	White powder call	N	N		2	Deer Creek	N
16-125	16-176814	I	22-Jul-16	1461 Fallston Road	1305	13	Assist Fallston Library with fuel spill clean up	N	N		2	Little Gunpowder Falls	N
16-126	16-176955	I	22-Jul-16	Bynum Road / Water Tower Way	312	03	Assist at scene of MVA	N	N		1	Bynum Run	N
16-127	16-177502	I	23-Jul-16	1017 Henderson Manor Court	311	03	Assist FD at scene of a gas leak	N	N		0	Bynum Run	N
16-128	16-179602	I	25-Jul-16	344 Granary Road	312	03	Investigate hydrochloric acid spill	N	N		1	Bynum Run	N
16-129	16-180574	C	26-Jul-16	107 Deaver Street	504	05	Home heating oil leak in the basement	N	N		3	Lower Susquehanna River	N
16-130	16-181315	I	27-Jul-16	Eden Mill Road / Big Branch Bridge	1007	10	Roadway binding agent spilled into creek/approx 5-6 gals	N	N		3	Deer Creek	Y
16-131	16-182093	I	28-Jul-16	1633 Pulaski Highway	542	05	Report of leaking kerosene UST/unfounded complaint	N	N		2	Lower Susquehanna River	N
16-132	16-182919	I	29-Jul-16	3704 Rock Run Road	103	01	Assist FD with a car fire	N	N		0	Swan Creek	N
16-133	16-184291	C	30-Jul-16	I83 / Northern Parkway	BC	BC	Assist Baltimore City during a flooding event	N	N		1	NA	N
16-134	16-186324	I	2-Aug-16	2603 Philadelphia Road	407	04	Fuel spill from a gas pump	N	N		5	Bush River	N
16-135	16-188616	I	4-Aug-16	Aldino Road / Mahan Road	156	01	Hydraulic oil spill from SHA truck	N	N		1.5	Deer Creek	N
16-136	16-195065	C	11-Aug-16	Hess Road / Suffolk Lane	1315	13	Hydraulic oil spill from trash truck	N	N		1.5	Little Gunpowder Falls	N
16-137	16-195356	I	11-Aug-16	Level Road / Hopewell Road	157	01	Assist FD with report of aircraft down/ good intent call only a stunt plane	N	N		0	Deer Creek	N
16-138	16-197795	I	14-Aug-16	513 E. Michaelsville Road	210	02	Assist TRT with air monitoring at the scene of a confined space rescue	N	N		4	Bush River	N
16-139	16-199476	C	16-Aug-16	I95 NB MM 790	495-77	04	Leaking diesel fuel from a saddle tank	Y	N		1.5	Bush River	N
16-140	16-201585	C	18-Aug-16	Rt 152 / Old Mountain Road North	831	08	MVA with possible chlorine leak	N	N		2.5	Little Gunpowder Falls	N
16-141	16-207372	N	24-Aug-16	10 Waldon Road	410	04	Small spill cleaned up - nothing in waterway	N	N		0	Bush River	N
16-142	16-207982	N	25-Aug-16	1111 Hanson Road	806	08	Small transmission fluid spill cleaned up by responsible party - nothing in water	N	N		0	Winters Run	N
16-143	16-209155	C	26-Aug-16	Rt 22 / Rt 136	120	01	Pump off from saddle tanks of tractor trailer	Y	N		4	Bush River	N
16-144	16-209490	N	26-Aug-16	2413 Gilwood Road	831	08	Small home heating oil spill cleaned up	N	N		0	Little Gunpowder Falls	N
16-145	16-211162	C	29-Aug-16	2052 Stratton Court	333	03	Assist HCSO after pepper spray deployment	N	N		3	Bynum Run	N
16-146	16-211228	I	29-Aug-16	I95 SB MM 742	495-77	04	Assist FD at scene of a MVA	N	N		0	N/A	N
16-147	16-211615	I	29-Aug-16	708 Towne Center Drive	808	08	Sheen on water from accidental overspray of watersealer	N	N		3	Gunpowder River	Y
16-148	16-212123	I	30-Aug-16	1601 Churchville Road	321	03	Cancelled by dispatch	N	N		0	Bynum Run	N
16-149	16-212124	I	30-Aug-16	Rt 22 / Rt 543	321	03	Assist FD at scene of MVA	N	N		1	Bynum Run	N
16-150	16-212224	C	30-Aug-16	1839 Castleton Road	923	09	Investigate drums dumped on the side of the road	N	N		6	Broad Creek	N
16-151	16-214398	N	1-Sep-16	803 Bel Air Road	341	03	Fuel spill on parking lot of the auto auction/ handled by Co. 3	N	N		0	Winters Run	N
16-152	16-214578	I	1-Sep-16	500 James Court	352	03	Investigate chemical odor in a residence	N	N		3	Winters Run	N
16-153	16-219711	N	7-Sep-16	3919 Heaps School Road	610	06	Notification of small spill of home heating oil / cleaned up by company	N	N		0	Deer Creek	N
16-154	16-220339	I	8-Sep-16	2940 Emmorton Road	409	04	Investigate odor in a 7-11	N	N		2	Winters Run	N
16-155	16-221132	I	9-Sep-16	1807 N. Fountain Green Road	313	03	Investigate odor of gasoline in the building	N	N		1	Bynum Run	N
16-156	16-225893	I	14-Sep-16	904 Charism Court	382	03	Assist FD at scene of a dwelling fire	N	N		1	Atkisson Reservoir	N
16-157	16-226871	I	15-Sep-16	1300 Revolution Street	505	05	Assist FD with chemical reaction, cancelled before arrival	N	N		1	Swan Creek	N
16-158	16-227447	I	16-Sep-16	W. Macphail Road / Tollgate Road	341	03	Investigate used motor oil container on side of the road	N	N		2	Atkisson Reservoir	N
16-159	16-232096	I	21-Sep-16	405 S. Juniata Street	504	05	Gasoline spill from a fuel delivery	N	N		3	Lower Susquehanna River	N
16-160	16-235505	C	25-Sep-16	630 Edgewood Road	405	04	10-15 gals of gas spilled from a pump	N	N		4	Winters Run	Y
16-161	16-236122	N	26-Sep-16	APG Road / Smith Ave	211	02	Notification of hydraulic fluid spill	N	N		1	Bush River	N
16-162	16-238030	I	27-Sep-16	601 Chelsea Road	201	02	Acid spill, one person injured	N	N		1	Bush River	N
16-163	16-238029	N	28-Sep-16	Bramble Brooks Lane	322	03	Notification from citizen of hydraulic oil spill from trash truck	N	N		0	Bynum Run	N
16-164	16-244667	I	6-Oct-16	230 Mayberry Drive	206	02	Assist animal control with air monitoring at a cat house	N	N		2	Swan Creek	N
16-165	16-245301	C	6-Oct-16	1117 Vanguard Way	321	03	Odor in apartment building from tile reglazing	N	N		1	Bynum Run	N
16-166	16-248079	N	10-Oct-16	900 Chelsea Road	298	02	Notification of a small oil spill from BGE	N	N		0	Swan Creek	N
16-167	16-249127	N	11-Oct-16	10 Old Sound Road	808	08	Notification of a small spill of transformer oil	N	N		0	Winters Run	N
16-168	16-253105	N	15-Oct-16	2200 Hampshire Drive	1310	13	Assist FD at scene of a car fire / no fuel spilled	N	N		1	Winters Run	N
16-169	16-255616	I	18-Oct-15	1750 Clark Road	505	05	Investigate odor of ammonia in the area, unfounded complaint	N	N		1	Lower Susquehanna River	N
16-170	16-257513	N	20-Oct-16	Susquehanna River / RR Bridge	570S	05	Notification of hydraulic oil spill in the river, 1 gal.	N	N		0	Lower Susquehanna River	Y
16-171	16-260599	I	24-Oct-16	Mercedes Drive / Dead End	420	04	Stand by at removal of waste oil truck from railroad tracks	N	N		2	Bush River	N
16-172	16-261126	I	24-Oct-16	Conowingo Road / East-West Highway	313	03	Assist FD at the scene of a MVA	N	N		0	Deer Creek	N
16-173	16-261472	I	25-Oct-16	S Fountain Green Road / Churchville Rd	321	03	Assist FD at scene of a MVA	N	N		0	Bynum Run	N
16-174	16-261796	N	25-Oct-16	907 Revolution Street	510	05	Notification of a small oil spill	N	N		0	Lower Susquehanna River	N
16-175	16-262697	N	26-Oct-16	JFK NB MM 787	495-77	04	Notification of fuel spill at scene of MVA / handled by FD	N	N		0	James Run	N
16-176	16-263072	I	26-Oct-16	1034 Willow Bend Drive	406	04	Assist FD at the scene of a field fire	N	N		0	Bush River	N
16-177	16-264869	I	28-Oct-16	Susquehanna River / Conowingo Dam	970S	09	Notification of unusual red color in the river / runoff from heavy rains up north	N	N		0	Conowingo Dam	N
16-178	16-266754	I	31-Oct-16	Rt 152 / Greenspring Ave	831	08	Fuel spill from MVA	N	N		2	Gunpowder River	N
16-179	16-266826	N	31-Oct-16	1212 Chelsea Road	298	02	Notification of ferric chloride spill at the plant	N	N		0	Bush River	N
16-180	16-266954	N	31-Oct-16	2311 Willoughby Beach Road	405	04	Notification of 2 gals. Of chlorine spilled	N	N		0	Gunpowder River	N

Hazmat #	Incident #	Response Code	Date	Location	Box	Fire Company	Description	Billable	NOV	Fine	Hours on Scene	Watershed	Reached Waterway
16-181	16-268920	N	2-Nov-16	228 Hitching Post Drive	311	03	Notification of small fuel spill	N	N		0	Bynum Run	N
16-182	16-269700	I	3-Nov-16	1904 Nobles Mill Road	104	01	Investigate paint and stain dumped on side of roadway	N	N		2	Deer Creek	N
16-183	16-270605	N	4-Nov-16	502 S. Parke Street	212	02	Person possible sick from bleach fumes/cancelled by FD	N	N		0	Swan Creek	N
16-184	16-270827	N	4-Nov-16	Edgewood Road / RR Overpass	404	04	Oil spill on the railroad, handled by CSX	N	N		0	Winters Run	N
16-185	16-270873	I	4-Nov-16	1470 Harford Square Drive	806	08	Cancelled prior to response	N	N		0	Winters Run	N
16-186	16-275416	I	9-Nov-16	645 S. Philadelphia Road	212	02	Assist FD at scene of MVA	N	N		0	Bush River	N
16-187	16-276073	N	10-Nov-16	3636 Aldino Road	156	01	Notification of home heating oil spill	N	N		0	Deer Creek	N
16-188	16-278589	C	13-Nov-16	B&O Road / Abingdon Road	401	04	Alerted for a train derailment/ cancelled by command, emergency stop only	N	N		1.5	Bush River	N
16-189	16-280591	N	15-Nov-16	3530 Conowingo Road	922	09	Notification of gasoline spill from fuel pump/ handled by FD	N	N		0	Deer Creek	N
16-190	16-281022	I	16-Nov-16	637 Bentgrass Drive	208	02	Assist TRT with air monitoring at the scene of a confined space rescue	N	N		3	Swan Creek	N
16-191	16-281534	N	16-Nov-16	2202 Conowingo Road	313	03	Notification of small home heating oil spill	N	N		0	Deer Creek	N
16-192	16-282308	C	17-Nov-16	JFK NB MM 843	295N	02	Fuel spill from a tractor trailer fire	Y	N		2.5	Church Creek	Y
16-193	16-285266	C	20-Nov-16	Rt 1 / Rt 136	922	09	Investigate tractor trailer overturned, no spill	N	N		2.5	Deer Creek	N
16-194	16-285450	I	21-Nov-16	4609 Richlynn Drive	420	04	Exothermic reaction from two chemicals mixing	N	N		1.5	Bush River	N
16-195	16-291796	C	28-Nov-16	1330 Cydonia Road	1324	13	Investigate damaged drum containing gasoline	N	N		2.5	Atkisson Reservoir	N
16-196	16-292184	N	29-Nov-16	2220 Ady Road	316	03	Oil spill from old building demolition	N	N		1	Deer Creek	Y
16-197	16-297701	I	5-Dec-16	803 Red Pump Road	352	03	Assist EMS at scene of cardiac arrest	**	**		**	NA	N
16-198	16-297768	I	5-Dec-16	2916 Churchville Road	120	01	Assist FD at scene of a MVA	N	N		0	Deer Creek	N
16-199	16-301452	I	9-Dec-16	1201 Pulaski Highway	541	05	Assist FD at scene of a MVA	N	N		0	Lower Susquehanna River	N
16-200	16-302277	N	10-Dec-16	3940 Conowingo Road	927	09	Notification of a fuel spill	**	**		**	Deer Creek	N
16-201	16-304157	N	12-Dec-16	1020 Gateway Road	826	08	Notification of kerosene spill/ handled by FD	N	N		0	Bush River	N
16-202	16-307408	C	16-Dec-16	1632 Main Street	601	06	Assist FD with HM5 at scene of a dwelling fire	N	N		2	Deer Creek	N
16-203	16-308064	N	17-Dec-16	3050 Churchville Road	120	01	Notification of a hydraulic oil spill from a highway truck	N	N		0	Deer Creek	N
16-204	16-309584	N	19-Dec-16	4855 Harford Creamery Road	712	07	Notification of home heating oil spill	N	N		0	Deer Creek	N
16-205	16-313275	C	23-Dec-16	1597 Atom Road	YC	YC	Assist YC with a subject who fell through the ice	N	N		10	YC	N
16-206	16-314233	I	24-Dec-16	2501 Palmyra Court	122	01	Assist EMS on a medical alarm	**	**		**	NA	N
16-207	16-314894	N	25-Dec-16	3101 Snake Lane	121	01	Possible meth lab/cancelled by HCSO, unfounded	N	N		0	James Run	N
16-208	16-317425	N	29-Dec-16	Rt. 7 / Rt. 40	215	02	Odor of sewer gas in the area	N	N		0	Bush River	N
16-209	16-318264	I	29-Dec-16	2902 Grier Nursery Road	361	03	Assist homeowner with disposal of oil	N	N		1	Deer Creek	N
17-001	17-000461	C	1-Jan-17	Tredmore Road / Churchville Road	321	03	55 gal. drum in the roadway containing racing fuel	N	N		1.5	Bynum Run	N
17-002	17-002820	N	4-Jan-17	723 N. Adams Street	501	05	Notification of a small spill of home heating oil	N	N		0	Lower Susquehanna River	N
17-003	17-003187	N	4-Jan-17	1002 Joppa Farm Road	808	08	Notification from FD of unrecoverable spill	N	N		0	Little Gunpowder Falls	N
17-004	17-003445	N	4-Jan-17	2220 Rutledge Road	1312	13	Assist FD, cancelled en route	N	N		1	Gunpowder River	N
17-005	17-003745	N	5-Jan-17	800 Hickory Drive	215	02	Notification of a Spill of 25 gallons of diesel fuel	N	N		0	Deer Creek	N
17-006	17-004788	C	6-Jan-17	3726 Norrisville Road	700	07	White powder call / product was Gold Medal Flour	N	N		2.5	Deer Creek	N
17-007	17-006068	I	7-Jan-17	624 Haven Place	405	04	FD request HM5, cancelled prior to arrival	N	N		1	Little Gunpowder Falls	N
17-008	17-008329	I	10-Jan-17	1212 Chelsea Road	298	02	Notification of spill of a polymer	N	N		0	Bush River	N
17-009	17-011490	N	13-Jan-17	Rt 1 / Rt 543	313	03	Notification of small spill of transmission fluid	N	N		0	Deer Creek	N
17-010	17-014460	C	17-Jan-17	601 Hoagie Drive	313	03	Clean up small blood spill	N	N		1	Bynum Run	N
17-011	17-014832	I	17-Jan-17	1708 Landmark Drive	382	03	odor of acetone in several apartments	N	N		3	Bynum Run	N
17-012	17-016362	I	19-Jan-17	334 Stockham Drive	206	02	Neighbor complaint of leaking oils from vehicles on car - responded and referred	N	N		1	Bush River	N
17-013	17-017533	I	20-Jan-17	1708 Landmark Drive	382	03	Investigate unusual odor in apartment building	N	N		3	Bynum Run	N
17-014	17-021904	I	25-Jan-17	JFK NB MM 73.0	895N	08	Fuel Spill at the scene of a 1050 PI Rescue / Cancelled prior to arrival	N	N		0	Gunpowder River	N
17-015	17-022538	N	26-Jan-17	1890 Trudeau Drive	381	03	Report of herbicides spilled in the residence / cancelled prior to arrival	N	N		381	Bynum Run	N
17-016	17-022743	I	1-Feb-17	6 N. Bond Street	305	03	Investigate unknown substance dumped in a dumpster	N	N		3	Bynum Run	N
17-017	17-028449	C	2-Feb-17	1700 Clark Road	505	05	Investigate odor of ammonia in the area/canceled prior to arrival	N	N		1	Lower Susquehanna River	N
17-018	17-032087	C	6-Feb-17	728 Hookers Mill Road	400	04	Assist FD at scene of a field fire	N	N		3	Bush River	N
17-019	17-033000	I	7-Feb-17	600 Concord Street	503	05	Investigate a milky substance in a pond	N	N		2.5	Lower Susquehanna River	Y
17-020	17-033438	I	8-Feb-17	1319 Riverside Parkway	420	04	Fuel spill at the diesel pump	N	Y	\$100.00	2	Chuch Creek	N
17-021	17-034359	I	9-Feb-17	1507 Forest Valley Drive	382	03	Investigate possible fuel leaking from truck into storm drain / unfounded	N	N		1	Atkisson Reservoir	N
17-022	17-035204	N	10-Feb-17	1235 Sharon Acres Road	725	07	Notification of small spill of home heating oil	N	N		0	Deer Creek	N
17-023	17-035396	C	10-Feb-17	2505 Mountain Road	831	08	Overturned truck at scene of MVA	N	N		3	Winters Run	N
17-024	17-037040	C	12-Feb-17	JFK SB / County Line	595S	05	Alerted for pump off / canceled before arrival	N	N		1	Lower Susquehanna River	N
17-025	17-046518	N	23-Feb-17	1405 Pylesville Road	601	06	Notification of small spill of hydraulic oil	N	N		0	Broad Creek	N
17-026	17-047916	I	24-Feb-17	Bel Air Road / Reckord Road	1301	13	Fuel spill from a car at scene of MVA	Y	N		1.5	Gunpowder River	N
17-027	17-052164	I	1-Mar-17	415 Moores Mill Road	301	03	Assist FD at scene of a MVA	N	N		0	Bush River	N
17-028	17-055914	I	5-Mar-17	2214 Cantley Drive	371	03	Assist FD with possible chemical suicide / unfounded, no chem suicide	N	N		0	Bynum Run	N
17-029	17-056002	I	5-Mar-17	36 Penn National Court	381	03	Assist FD at scene of a dwelling fire	N	N		0	Bynum Run	N
17-030	17-063302	I	13-Mar-17	3050 Churchville Road	120	01	Notification of 15 gallons of hydraulic oil spilled	N	N		0	Deer Creek	N
17-031	17-065210	I	16-Mar-17	2209 Conowingo Road	313	03	Notification of small oil spill	N	N		0	Bynum Run	N
17-032	17-065850	C	17-Mar-17	Rt 155 / Glenville Road	120	01	Pump off from a disabled tractor trailer	Y	N		3	Deer Creek	N
17-033	17-069588	C	21-Mar-17	JFK SB MM 740	495-77	04	Fuel spill from MVA between TT and dump truck	Y	N		2.5	Gunpowder River	N
17-034	17-071936	N	23-Mar-17	2209 Conowingo Road	3131	03	Notification of a small spill of fuel	N	N		0	Deer Creek	N
17-035	17-073098	B	24-Mar-17	1350 Brass Mill Road	420	4	Spill of hydrogen Peroxide with multiple patients	Y	N		2.5	Swan Creek	N
17-036	17-073167	C	24-Mar-17	Rt 1 / Quarry Road	602	4	Assist TRT with rehab during a high angle rescue	N	N		1	Broad Creek	N
17-037	17-077564	I	29-Mar-17	Edelin Road / Dead End	808	8	Respond for a report of 7 propane bottles on the ground	N	N		1	Gunpowder River	N
17-038	17-083053	I	4-Apr-17	2903 Craigston Lane	409	4	assisted on a cardiac arrest in the area	N	N		1	Bynum Run	N
17-039	17-085320	I	6-Apr-17	736 Revolution Street	504	5	BGE transformer leaking oil - found to be mineral oil	N	N		1	Lower Susquehanna River	N
17-040	17-090817	I	12-Apr-17	1300 Revolution Street	505	5	respond per procedure for an automatic alarm - cancelled prior to arrival	N	N		0	Lower Susquehanna River	N
17-041	17-094810	C	17-Apr-17	1709 Edgewood Road	408	4	Assist HCSO with suspicious chemicals in trunk of car	N	N		1.5	Bynum Run	N
17-042	17-104262	I	27-Apr-17	2 W Riding Drive	331	3	gas can with 2 gallons of fuel left on side of road	N	N		0.5	Bynum Run	N
17-043	17-106068	B	29-Apr-17	312 Prospect Mill Road	312	3	Armo Crew Reported strong chemical odor in residence. Assisted CO 3	N	N		2	Bynum Run	N
17-044	17-109452	N	2-May-17	717 Highland Road	610	06	Investigate possible chemicals left at abandon property	N	N		0	Broad Creek	N
17-045	17-108862	I	2-May-17	4366 Madonna Road	710	07	Assist FD at scene of a trash fire with possible Hazmats	N	N		1.5	Deer Creek	N
17-046	17-113414	N	8-May-17	502 Bel Air Road	304	03	Notification of small spill of hydraulic fluid	N	N		0	Atkisson Reservoir	N

Hazmat #	Incident #	Response Code	Date	Location	Box	Fire Company	Description	Billable	NOV	Fine	Hours on Scene	Watershed	Reached Waterway
17-047	17-115647	C	10-May-17	3320 Midland Court	403	04	Hydraulic oil spill from trash truck	Y	Y	\$1,000.00	4	Bush River	N
17-048	17-116095	C	10-May-17	536 Doefield Court	403	04	Spill of gasoline in a flower bed by a contractor	Y	Y	\$1,000.00	5	Bush River	N
17-049	17-116467	N	11-May-17	3482 Emmorton Road	410	04	Notification of styrofoam peanuts in a stream, referred to HCSCO	N	N		0	Winters Run	N
17-050	17-116648	C	11-May-17	536 Doefield Court	403	04	Follow up investigation	N	N		2	Bush River	N
17-051	17-117850	C	12-May-17	635 Old Philadelphia Road	212	02	Assist FD with venting natural gas pipe	N	N		2.5	APG	N
17-052	17-119698	M	15-May-17	JFK SB MM 888	595	05	Assist FD with medical waste at scene of a mass causality accident	N	N		3	Lower Susquehanna River	N
17-053	17-123524	I	19-May-17	5 Bel Air South Parkway	333	03	Investigate can of freon being released in store, handled by FD	N	N		1	Attkisson Reservior	N
17-054	17-123888	I	19-May-17	1403 Old Mountain Road S	801	08	Investigate suspicious powder brought the fire house	N	N		1.5	Gunpowder River	N
17-055	17-124112	C	19-May-17	504 Advantage Ave	215	02	Ammonia leak from the piping	N	N		1.5	APG	N
17-056	17-124181	B	20-May-17	2524 Laurel Valley Garth	409	04	Investigate an exposure to a white powder on an EMS call	Y	N		3	Bynum Run	N
17-057	17-126916	I	23-May-17	41 N. Philadelphia Road	212	02	Investigate gasoline spill in basement flooding incident	N	N		1.5	Swan Creek	N
17-058	17-129254	I	25-May-17	Rt 22 / Rt 136	120	01	Assist FD at scene of a MVA	N	N		0	Deer Creek	N
17-059	17-133138	N	30-May-17	2101 Rock Spring Road	381	03	CO in a grocery store from generator useage	N	N		0	Bynum Run	N
17-060	17-133327	I	30-May-17	Rt 23 / Grafton Shop Road	381	03	Medical waste dumped at the intersection	N	N		1.5	Bynum Run	N
17-061	17-133629	C	31-May-17	JFK SB MM 817	895S	08	Fuel spill from truck on I95	Y	N		2.5	Gunpowder River	N
17-062	17-134250	I	31-May-17	5 Bel Air S Parkway	333	03	Pick up carbon dioxide cylinder left in parking lot	N	N		2	Attkisson Reservior	N
17-063	17-134939	N	1-Jun-17	1501 Perryman Road	206	02	Notification of small fuel spill	N	N		0	Bush River	N
17-064	17-135976	C	2-Jun-17	525 N Paradise Road	203	02	Home heating oil spill from house, leaked into pond	N	N		4	Swan Creek	Y
17-065	17-138188	C	5-Jun-17	525 Paradise Road	203	02	Removal of contaminated pads from previous call	N	N		2	Swan Creek	N
17-066	17-138737	C	6-Jun-17	1801 Clark Road	505	05	Nitrogen leaking from a carboy	N	N		1	Lower Susquehanna River	N
17-067	17-140365	I	7-Jun-17	150 Branchwood Court	403	04	Notification of a small gasoline leak from a parked car	N	N		1	Winters Run	N
17-068	17-141388	N	8-Jun-17	112 Pylesville Road	691	06	Sewage spill behind the school, referred to Health Dept.	N	N		0	Deer Creek	N
17-069	17-141703	I	9-Jun-17	1037 Old Pylesville Road	611	06	Report of oil and other chemicals leaking at garage, unfounded complaint	N	N		2	Deer Creek	N
17-070	17-144747	I	12-Jun-17	JFK SB MM 850	295S	02	Assist FD at scene of a motorcycle PI	N	N		0	APG	N
17-071	17-146554	C	14-Jun-17	600 Water Street	501	05	Decon of dive team contaminated with oil from spill in river	N	N		3	Lower Susquehanna River	Y
17-072	17-146890	I	14-Jun-17	611 Dewsbury Court	352	03	Assist EMS on scene of a medical call	N	N		0	Attkisson Reservior	N
17-073	17-151836	I	20-Jun-17	3111 Abingdon Road	407	04	5 Gallon spill from Harford Transit bus	N	N		1	Bush River	N
17-074	17-153716	I	22-Jun-17	Holly Berry Court	410	04	Notification of hydraulic oil spill from a trash truck	N	N		0.5	Winters Run	N
17-075	17-153967	I	22-Jun-17	2220 Ady Road	316	03	Notification of school bus leaking oil	N	N		1	Deer Creek	N
17-076	17-154561	C	23-Jun-17	1803 Greenblade Court	321	03	Mercury spill from a broken thermometer	N	N		3.5	Bynum Run	N
17-077	17-156754	C	25-Jun-17	3125 Anna Drive	922	09	Confined space rescue, hazmat cancelled prior to arrival	N	N		2	Broad Creek	N
17-078	17-157351	I	26-Jun-17	1408 Valley Forge Way	400	04	Investigate abandon swimming pool with chemicals, unfounded complaint	N	N		1	James Run	N
17-079	17-159841	I	28-Jun-17	4609 Richlynn Drive	420	04	Assist FD with fire at Tic Gums	N	N		3	Bush River	N
17-080	17-160005	C	28-Jun-17	I95 NB MM 885	595	05	Truck leaking chicken fat from containers in cargo area	N	N		2	Lower Susquehanna River	N
17-081	17-160669	N	29-Jun-17	113 Haverhill Road	818	08	Notification of spill of 1 gal of diesel fuel on road	N	N		0	Gunpowder River	N
17-082	17-161390	N	30-Jun-17	908 Revolution Street	504	05	Oil sheen on Lily Run, believed to be from water main break and new paving	N	N		0	Lower Susquehanna River	N
											</		

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION



EDWARD HOPKINS
DIRECTOR OF EMERGENCY SERVICES

HARFORD COUNTY GOVERNMENT

LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

Monthly Meeting – September 21st, 2016

3:00 p.m. - Harford County Emergency Operations Center

Meeting called to order at 1502

May minutes approved.

Hearing - North American Trade School

- On May 2nd to MVA for a fuel spill from a truck that was there for testing. Manager approached the driver of the truck and told driver to stay. Went back inside and the driver left the scene. Hazmat and MDE were called to assist with clean up. Company was charged \$1,000 fine was assessed for failure to report spill and leaving the scene without attempting to clean up the spill. Mr. Ripley was very cooperative when notified and helped to remedy the situation.
- Mr. Ripley advised he received a call from the Hazmat team and dispatched two employees from the school to clean up the spill. Truck was sent in for repair and the problem with the truck was corrected. NATS has trained all the instructors on Hazmat procedures and installed spill kits in all their trucks. Also may sure all instructors have phone numbers for all appropriate parties that need to be notified in case of spill. Driver advised that he knew the truck was leaking and that after talking with MVA employees they determined they had nothing to clean the spill up. Driver advised that no one from MVA told him he needed to stay. No malice or intent on part of the driver and student involved.
- Fine has been paid in full, motion to close case, seconded and closed.

Report of Incidents - Clarence Ross

- Heavy call load since last meeting. Most are routine fuel spills and notifications.
- Assisted HCSO with a one pot meth lab found in a car
- Road binding agent spilt into creek by DPW
- White powder call, was paint from a vandalism
- Look into updating the MOU's between the county and the three municipalities
- Health dept. went out for a subject burning a dumpster full of cosmetics.

SARA Title III Report - Forney Buchanan

- All reports are in. Nothing to report.

MDE Report - Pat Williams

- Donna retired on Sept. 1st. Looking into replacing her with someone else in the office. Concerned about reporting season
- Possibly found funding to get all counties in Maryland onto the Tier II system.

Hazmat Report - Clarence Ross

- Command School had its last day after 25 years. Trained thousands of people in Harford County.
- VA beach conference was held last week. 6 technicians attended
- Decon. drill on Thursday at Upper Chesapeake assisting APG with training.
- FBI holding a drill tomorrow as well, requested Harford's Hazmat team
- TRT requested to assist Baltimore City with flooding from rain event.

CRTK Grant - Forney Buchanan

- HMP grant money has been secured for planning and training purposes. Any requested training let Forney know.

Emergency Management - Rick Ayers

- Prepare because you care class is happening this month. This time CPR cards will issued to attendees.
- Ellicott City - caught the city off guard. Weather service never put Howard County under any warnings. Started getting multiple calls into the 911 center. 6 inches of rain hit the area over a short time frame.
- Winter storm reimbursements coming in from the winter storms.

- NextGen 911 is coming, will allow citizens to text 911 as opposed to calling in. Equipment in most 911 centers are outdated and need upgrades to be able to handle this. Will allow videos and pictures to be sent to 911.
- Teaching HCSO in service on different areas. Most training on RAD equipment and responsibilities in the event of a Peach Bottom release.
- Crude oil table top at Cecil County, the county gets approx. 3 fully loaded cars a week that goes through. Was put together by the Coast guard. Will have a follow up drill with another type of situation.

Old Business

- Command School - this was the last year it will be held in Harford County.
- Review of Appendix 4 - completed during the July sub-committee meeting. Only two small changes were made. Motion to approve minutes, seconded and passed.

New Business

None

Items from Members

No items

Meeting adjourned at 1608 hours.

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION



EDWARD HOPKINS
DIRECTOR OF EMERGENCY SERVICES

HARFORD COUNTY GOVERNMENT

LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

Monthly Meeting – November 16th, 2016

3:00 p.m. - Harford County Emergency Operations Center

Meeting called to order at 1501

September minutes approved.

Report of Incidents - Clarence Ross

- Two calls with fuel in the water.
- Problems with subjects spilling gasoline from fuel pumps and then leaving the area.
- Acid spill at the Rite Aid warehouse, battery exploded in a subject's face causing injury.

SARA Title III Report - Forney Buchanan

- Nothing to report

MDE Report - Pat Williams

- Gearing up for reporting seasons. Still only one person in the office, no interest to hire in the near future.
- EPA making changes to the way the law is interrupted. Carbon Dioxide is being reviewed.
- Still working on bring all MD counties onto the Tier II System.

Hazmat Report - Clarence Ross

- Training at Level tomorrow, working on biological response training.

CRTK Grant - Forney Buchanan

- No change from last meeting

Emergency Management - Forney Buchanan

- Finished another Prepare Because You Care Class which was held at Bulle Rock in Havre de Grace. We will review the feedback forms filled out by all the students and may revise the training classes based on the forms. Tonight, several of the class members will come here for a tour of the building.
- Working on updating all the all-hazard checklists for all positions in the EOC
- Working with the State and have set up training schedule for all EOC staff to attend WebEOC training as we're moving away from Knowledge Center as the EM planning tool in the EOC.
- Working with Contractor as we are also changing emergency notification system from Blackboard Connect to another system. Procurement working on finalizing paperwork with the Company. Once that is completed, we will ensure that all "users" are trained prior to the switch.
- Will be inventorying several of our EM trailers – specifically the 2 CPOD (commodity point of distribution) trailers as well as a UASI purchased Pet Shelter Trailer. The AKC trailer was already inventoried.
- Also beginning the revision process to the County's Hazard Mitigation Plan.

Old Business

- None

New Business

- Changes to the LEPC - working on making changes to increase the membership, look to bring in guest speakers to train the group on various issues, bring in different portions of government that is involved in our EOC activations. Work on a more all-hazards approach.

Items from Members

- Betsey - Was at a Royal Farms when a small spill occurred, went to cashier to ask for a spill kit but no one in the store was aware of clean up procedures.

Meeting adjourned at 1550 hours.

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION



EDWARD HOPKINS
DIRECTOR OF EMERGENCY SERVICES

LOCAL EMERGENCY PLANNING COMMITTEE
Meeting Agenda
January 18th, 2017

First Log
Chlorine

Reby MS3
Local govt reimbursement
SARA Title III clean
Subgroups such as
Tier II, HM
"Kris"

1. Call to Order Chair Richard Schwanke

2. Introductions

3. Hearings: None

4. Approval of November Minutes Chair - Richard Schwanke

5a. Guest Speakers - Chris - Region III EPA On-Scene Coordinator

6-5b. Report of Incidents Special Ops. Manager - Mike Brunicke

7-6. SARA Title III Report reports coming in 167 facilities MCE + Verica SARA Title III Planner - Forney Buchanan

8-7. MDE Report MDE CRTK - Pat Williams

9-8. Hazmat Report Computer services consolidation, system is overloading, session timeout before saving all data systems experience the same thing at all data bases Special Ops. Manager - Mike Brunicke

10-9. CRTK Grant Grant Coordinator - Forney Buchanan

11-10. Emergency Management Nothing new on HEMP grants, no RTK from State expected

Emergency Management - Rick Ayers

More of EOC partners (starting soon)

OLD BUSINESS

Health H.13 - Governor of Durn permits for fire Camp

Revamping the LEPC

Notice in paper

12-11 NEW BUSINESS

Ideas for guest speakers

15-13. Items from Members

Next Meeting: March 15th, 2017

Future Meetings: May 17th, 2017

July 19th, 2017

Find Commodity Flow Studies in old notes

MARYLAND'S NEW CENTER OF OPPORTUNITY
410.638.4900 | 410.879.2000 | TTY Maryland Relay 711 | www.harfordcountymd.gov

2220 Ady Road, Forest Hill, Maryland 21050

THIS DOCUMENT IS AVAILABLE IN ALTERNATIVE FORMAT UPON REQUEST

• Moving EOC web vendor
under state-wide
no longer "Knowledge Center"

• \$125K → \$45K
on En. Notification 2016 → 2018 HM
system responses

2015 → was 186

2014 → way 209

CST Team from Mass.

Mass Decon Unit

w/ 75 people

Level FD tomorrow

17 meters from 10 years

ago reaching

end of life time

Safe sites & Spectrometry

at college Creek

9/11/2011

MDE report

1) Carbon dioxide reporting
not any longer considered
10,000 lbs min. reporting
(500 lbs in Maryland)

2) DE. becoming a state plain state for OSHA
Federal / State / Municipal "have" to report

3) OSHA change to GHS will change
Tier II for the 2017 reporting season
will be changed on 2017 form

EPN was name to LEO

- Exercises
- Facilities w/ is not parties
- Command flow studies
- Assorted hosts to LEPC
- No direct flow of cash but
have committed Krison
- Cannot buy food

BARRY GLASSMAN
HARFORD COUNTY EXECUTIVE

BILLY BONIFACE
DIRECTOR OF ADMINISTRATION



EDWARD HOPKINS
DIRECTOR OF EMERGENCY SERVICES

HARFORD COUNTY GOVERNMENT

LOCAL EMERGENCY PLANNING COMMITTEE (LEPC)

Monthly Meeting – May 21, 2017

3:00 p.m. - Harford County Emergency Operations Center

Meeting called to order at 1500

Report of Incidents – Mike Brunicke

- Hydrogen peroxide spill at a laundry. Had multiple patients that were evaluated by EMS
- Automatic alarm at Cytec. Hazmat is now notified whenever there is an alarm at this location.
- Assisted Bel Air fire company on a call with a strong chemical odor in a residence.

SARA Title III Report – Mike Brunicke

- Nothing to report

MDE Report - Pat Williams

- Maryland's Hazardous Materials law was repealed. Will become effective July 1st. Repeal of associated regulations will follow.
- Significant changes being made to EPCRA sections 311 & 312 reporting requirements. There will be 28 physical and health hazards instead of 5. Every entry must be edited to reflect the new standard. These changes will go in effect for the 2017 reporting year. Working with vendor to make sure the changes are available to the users as early as possible.
- EPA changed guidance regarding the applicability of EPCRA 311 & 312. All state, county and municipal entities are now required to report. MDE will be reaching out to LEPC's to have them help bring these facilities into compliance. Pat will be available to come help those in need.

Hazmat Report – Mike Brunicke

- Replaced 4 Level A suits
- Tour of Exelon's Sod Run facility.
- Tour of Battele
- Upcoming Coast Guard drill

CRTK Grant – Mike Brunicke

- No change from last meeting

Emergency Management -

- Harford County is required by FEMA, under the Disaster Mitigation Act of 2000, to update the local hazard mitigation plan every 5 years.
- Harford County's previous Hazard Mitigation Plan was approved by FEMA in 2012, thus the need for a 2017 update.
- The Harford County Hazard Mitigation Planning Committee has been collaborating and providing new and updated information for the 2017 plan.
- Hazard mitigation plans contain information and details regarding the most likely to occur hazards that could impact a community. A vulnerability assessment is also included to assess risk to the community.
- Stakeholders in the hazard mitigation process provide updated goals, objectives, and action items for lessening the impact of future disaster events. Stakeholders include government departments and agencies, private sector, and the public. All of them are invited to review the updated plan and provide comments.
- FEMA will review the draft plan after all comments have been received and then, if all requirements are deemed to have been satisfactorily met, will issue a letter of approval that is effective for an additional 5 years.

Old Business

- None

New Business

- None

Items from Members

- None

Meeting adjourned at 1600 hours.

DRAFT COPY